MOTHER TONGUE

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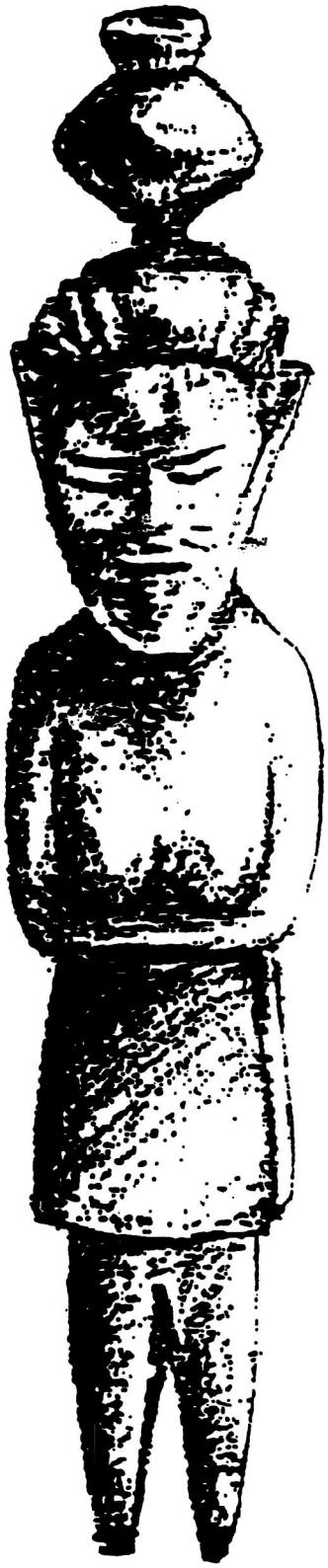

CONFERENCE REPORT

Meetings held at Harvard University,October 21-22, 2006, entitled "*Asian Remnant Languages and the Year of the Australoid*". Joint sponsorship: Harvard University and ASLIP (Association for the Study of Language In Prehistory)

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OFFICERS OF ASLIP

President Michael Witzel
Department of Sanskrit
and Indian Studies
Harvard University
1 Bow Street,
Cambridge. MA 02138
witzel@fas.harvard.edu
617-495-3295

Vice President.. John D. Bengtson
5108 Credit River Drive
Savage, MN 55378-4620
jdbengt@softhome.net
Tel. 952-440-5538

Secretary-Treasurer Harold C. Fleming
16 Butman Avenue
Gloucester, MA 01930-1006
nfleming1@earthlink.net
Tel. 978-282-0603

Mother Tongue Editor:

(2006) **Harold C. Fleming** nfleming1@earthlink.net
(2007) **John D. Bengtson** jdbengt@softhome.net

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INTRODUCTION TO ISSUE 11 OF MOTHER TONGUE

Asian Remnant Languages and The Year of the Australoid
A Conference held at Harvard University, October 21-22, 2006

I. General Logic and Themes of the Conference

The Asian Remnant Languages and the Year of the Australoid combine the interests of scholars who have sought to unveil the **substrata** under the 'standard' or 'established' languages or families of languages of South Asia, and the scholars interested in finding relatives or taxonomic niches in which to locate such salient isolates as **Kusunda** of Nepal or **Nihali** of India, with more established families such as**Andamanese** of the Bay of Bengal, **Papuan** of New Guinea, **Australian,** and **Tasmanian.** The somewhat controversial collation of families of southeast Asia under the rubric of **Austric** is included here as well as the membership of some non-Austronesian languages of Indonesia, i.e., **Timor-Alor-Pantar** languages and those of **North Halmahera** , all told 30 more or less, in Joseph Greenberg's proposed **Indo-Pacific** super-phylum of languages.

However we shall also be interested in aspects of the physical anthropology problem presented by the *Australoid hypothesis* which detects a series of populations located in bits and pieces in the entire area from northern India to eastern Indonesia, populations who differ physically from the dominant peoples of their areas, who also bear resemblances to the peoples of New Guinea, Australia, Tasmania, and some parts of Melanesia, Hence the term '**Australoid'** This term is long established in the nomenclature of biological anthropology where it enjoys the status of 'controversial'. One champion of the term was Carleton Coon, former professor at Harvard's Peabody Museum, whose outline will be offered here – in a moment.

At the very beginning we need to place our selves in the general context of the research that our Association has been pursuing for the last 20 years. Like much scientific research our discussions and research efforts have been addressed to the ultimate questions about *Homo sapiens* : of how we/they ventured forth from our original homelands, of what routes we took, of what places we settled early on, of what linguistic groups we formed over time, of what cultural differences we developed over time and in what areas, and of what measurable physical differences we developed in various areas around the globe.

At this stage in the inquiry we can stipulate a few things which have been discovered or at least agreed on for the most part –so-called consensa. Each consensus is potentially debatable but in all probability the great majority of scientists would agree with it. **The first** and primary consensus is that all modern human populations are descended, **biologically** at least, from one ancestral population of *Homo sapiens sapiens*. **Second** that population lived in **Africa** before it spread outside of it. **Third** that population lived in **eastern Africa,** although its territory may have been quite extensive, say from Nubia down through the Sudan or the Horn to Kenya and Tanzania, if not farther south. **Fourth** that population probably **spread northward** in the Nile Valley,

westward into the Sahara and western Africa. And **fifth** that population had human **spoken language** and the beginnings of **verbally mediated culture.**[1]

There is a near consensus that that human spoken language was the mother, the ultimate source, of all modern or known languages. This is usually spoken of as the Monogenesis hypothesis. A minority at least theoretically favors plural source languages and might be called the Polygenesis hypothesis, except that I do not know of anyone who favors it. There is also a near consensus that this original human language which many like to call "proto-human" was present in the populations which made the first great Diaspora out of Africa. There is no consensus about the time or general time period when the great Diaspora began or when proto-human was associated with it. There is absolutely no consensus among linguists about the age of proto-human

There is however a bifurcated consensus among scientists about the time period when biological Homo sapiens began to spread out from Africa. One fork and probably the dominant one favors the Aurignacian hypothesis which has the Diaspora beginning around 50,000 BP. A second fork favors the correlation between the Levantine sites of Qafzeh and Skhul and the beginnings of the great Diaspora. The Aurignacian proponents usually dismiss the Levantine hypothesis on the basis of the alleged failure of the Qafzeh humans to be fully modern in behavior and/or anatomy. One principal argument seems to be that because the Levantines had a Mousterian tool kit, as Neanderthal did, then they could not be any more modern than Neanderthal was. The Levantine proponents tend to dismiss the Aurignacian hypothesis because it is too young to account for Australia's settlement 10,000 years before Aurignacian was supposed to have left Africa. They also think that the *"Levantine humans of 100,000 were not fully human"* hypothesis is completely spurious because it assumes that technology is an accurate predicter of other human behaviors like religion or intellect. Furthermore, they argue that the high probability that Australians of 60,000 BP were likely speakers of a human language –or how else to account for Australian or Papuan languages – which they could not have gotten from the Aurignacian diaspora –then the likelihood of their deriving that language from the Levantine diaspora increases because it must have taken some time to go from the Levant or from eastern Africa to Australia.

While it may be possible to find other weaker consensa to list here, for the purposes of this conference we will eschew that endeavor. It is more useful for us to proceed with specific hypotheses which may lead us towards those goals listed above or may turn out to be simply false. In this way we can set the stage for those broad endeavors which are aimed at the area from India to Tasmania or Fiji, especially Carleton Coon's and Alfredo Trombetti's hypotheses.

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[1] Verbally mediated culture is presumed to be a latter development than earlier or 'archaic' culture which could have included gestures or whistling or single phones, shared habits of hunting or gathering not involving language, shared technology taught by example, as in chimpanzee termite gathering, and so forth. Nor do I presume that the great apes were culture-less. The phenomenon of culture is bigger and older than language and does not necessarily include language, **unless** one defines culture to include language as a necessary part or feature. Such a definition does not appeal to archeologists – at least.

Looking back at the Levantine versus the Aurignacian hypotheses, I propose (by hypothesis) that they are **both right** about some things. Taking the Aurignacian first, I see it as coinciding almost perfectly with the linguistic taxon I call BOREAN which is strongly marked archeologically for the settlement of Central Asia, Europe, northeast Asia and the New World. No doubt a major part of western India was affected too. Linguistically, Borean is based on Afroasiatic and Amerind as its two ends, with Eurasiatic or the rest of old Nostratic being in it, as well as Dene-Caucasic which I prefer to call Vasco-Dene to honor Morris Swadesh (his was a larger entity). Finally the odd Middle Eastern isolates, primarily Sumerian and the barely known Caucasic representatives in Iran, such as Gutian, Kassitic, etc.[2] are included. It is clearly a northern phenomenon, albeit with its roots in tropical Africa. There is one sensitive piece of it, Dravidian, whose relationships to non-Borean languages have intrigued scholars, not the least of whom was Alfredo Trombetti.

But as I have argued in MOTHER TONGUE 10, there was probably a much older linguistic movement out of Africa, correlated with both the Levantine finds but also the widespread African Mousterian sites which may or may not have reached India; the archeology is unclear on that. [3] This had been labeled the **"Tropical hypothesis"**, including most of the problem areas of this conference but also two African phyla, Niger-Congo and Nilo-Saharan. However, for a number of reasons I have abandoned that label and I would propose that the term Levantine be extended to include both the archeological evidence and the main thrust of Trombetti's hypothesis. Levantine gives us the clearest time period and perspective because it is a full 50,000 years earlier than Aurignacian and Borean. This is of course far beyond the reach of any glottochronology or present system of linguistic dating, just as radio-carbon dating cannot reach Qafzeh or Skhul dates.

Clearly we do not know that any Indian phylum is related to any other phylum to its east or southeast, assuming that everyone knows that Munda is part of a major Southeast Asian phylum, Austroasiatic. We are here in part to examine the potential links between the various phyla from India to Tasmania. While that is the proper way to test the Levantine hypothesis, still one is reminded that relationships are going to be a lot more remote than they are in Borean because they are much older. Oddly enough that is part of the reason for adding the two African phyla to Levantine because these two probably began branching out separately at the same time that parts of the Levantine diaspora were moving towards India.[4] A secondary reason would be that Merritt Ruhlen told me recently

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[2] Thanks to John Colarusso for telling me of his conclusions about these intriguing languages. For Sumerian and its relation to Nostratic we are indebted to Alan Bomhard.

[3] It is intriguing almost beyond endurance to know that an Indian archeological site with a date of 100,000 is also Mousterian but not to be able to know more about it. Perhaps someone here will know more of it. (It turned out that someone did know more about it!)

[4] Nilo-Saharan clearly has its homeland in the Sudan, and most probably in the eastern third. Its historical thrust has rather obviously been to the northwest into the Sahara, west into the Sahel and south into both the Congo and Uganda-Kenya. Its semi-detached newly controversial phyla, Kadu and Shabo, add considerable force to that homeland hypothesis, being located in Kordofan and extreme southwestern Ethiopia respectively. Niger-Congo has three most likely solutions, viz, that it came down from the Sahara,

that his research has indicated substantial evidence linking these Africans to Australia and/or New Guinea, skipping over India and the giant Austric super-phylum hypothesis of Southeast Asia. While he hesitated to publicize this finding because colleagues told him that he must not jump over Austric, yet **theoretically** Niger-Congo could be as closely related to, say, Papuan as Austric was, especially if Austric had derived from a movement even earlier than Levantine.

Were he alive today Coon would be famous for championing two theories with which most contemporary physical anthropologists **disagree**. The one was the concept of race as a viable and useful tool in human taxonomy; the other was multilateral co-evolution whereby each major race is descended *in situ* from a distinct major fossil ancestor or the ancestral population of its present area. Thus, Coon regarded the Australian aborigines and their Australoid cousins as descended from Pithecanthropus, while Europeans or Caucasoids come from Neanderthal; and so forth for the other major races (Mongoloid, Congoid, Capoid) Perhaps what saved Coon from *reductio ad absurdum* in some cases was his explanation of local races as created by climatic conditions or gene flow from two or more major races. Little mentioned but probably assumed was the role of mutations in producing local varieties under specified climatic conditions. A great part of the exceptional or deviant populations is explained by climate and gene flow..

In general terms Coon sketched the racial history of our vast area in these terms: Afghanistan and Pakistan were squarely in the "Caucasoid Realm". **India** was in the Caucasoid realm in its north and most of the west at least down to Kerala, while its Himalayan regions were Mongoloid country. South India was partly Caucasoid and partly Australoid. Virtually every tribe or ethnic group, except in the northwest, displayed a similar tendency in its caste structure; Caucasoids in the higher strata and Australoids in the lower or at least the lowest. Five observable traits characterized the Australoid 'type', viz., dark skin, curly hair, frizzly hair, prominent brow ridges, and very short stature. Only the last two of these traits could actually be associated with any fossil ancestor, but all except the brow ridges are found plentifully in Africa which is exceeded only by Australia and New Guinea where all are found. Thus a kind of phenotypic link between Africa and Australia, via Greater India, was established –long before the Out of Africa hypothesis was formulated. Only the genetic studies in the second half of the 20t^{h} century upset the 'obvious' linkages. Gradually scholars came to disconnect the short stature from the overall Australoid and to posit **Negritos,** clearly on the model of the African Pigmies.

Next, Southeast Asia is seen as fundamentally or originally Australoid country with heavy incursions of Mongoloids in the west. Including the Andamans and Nicobars as part of southeast Asia, he finds Australoids in bits and drabs in Malaysia (Semang and Senoi), Philippine Negritos (Aeta et al on Luzon,

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that it came from the far western reaches near the Atlantic, or that it came from the central Sudan near Kordofan. While Afrasian and Khoisan are arguably the ancient highlanders, Nilo-Saharan and Niger-Congo are equally arguably the lowlanders. All fit more or less comfortably within the Khartoum-Addis Ababa-Nairobi triangle.

Mindanao, Palawan and elsewhere), and eastern Indonesia (Timor, Alor, Pantar, Halmahera)[5]

Luca Cavalli-Sforza (HGHG 1994) overturned the equation of Australoids and Negritos by reviewing a number of **genetic** studies which measured genetic distances among various populations of our vast region. The Negritos of South India (Kadar) and Malaysia turned out to be genetically closest to their neighbors –whatever their linguistic or cultural classification –than to Papuans or Australians. However, Peter Underhill, in a more recent study, showed genetic connections between the Andamanese and people from the Kusunda area of Nepal. (Kusunda are often described as fairly short, while many consider the Andamanese as proper Negritos.) So the correct conclusion is that some Negrito are short variants of the general population of their area, while others seem to be Australoids in the basic meaning of that term. We do not know as yet that the Andamanese are proper Australoids either, since we lack, or I know nothing of, them in comparison to the Papuans and Australians. Looking only at photos of Andamanese, I was struck by how nondescript they were, hardly Papuan or Australian at all. A friend, shown the same pictures, described them as "African Polynesians". So their status as Australoids is not to be assumed without demonstration genetically.[6] According to Norman Zide in his careful review of all sources on the Andamanese, their linguistic affiliation with Indo-Pacific (hence Papua and Tasmania) is not to be assumed either.

Finally, what I prefer to call the Southwest Pacific consists of Tasmania, Australia, New Guinea, and a large number of islands east and northeast of New Guinea as far as Fiji, often called the Melanesian islands or simply Melanesia, the 'black islands'. Oddly enough, this region has older archeological dates than either Southeast Asia (except for Homo erectus sites) or India. Very recent excavations in India have not been published fully but at least one site is said to be 100,000; that would top the SW Pacific dates of 60,000-30,000 in Australia, New Guinea and Melanesia. The customary assumption which practically everyone makes is that bodies, languages, and cultures have flowed constantly from India or south China through Indonesia to the Southwest Pacific. Even beyond the Fijian line to Polynesia and Micronesia; there, however, it can be shown that events did move from west to east but in fairly recent times. However as the case of the famous Tikopia shows, some Polynesians moved back to the west.

Ultimately, the logic of the 'out of Africa' assumptions would seem to dictate a general movement or series of movements from eastern Africa to India and east/southeast to Australia. However, in the literature there is a theory of boat

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[5] Two tribes in Cambodia should be added to that list, namely Porr and Saoch of eastern Cambodia. The Negrito or Pygmy variant seems to be present in some of these populations. Thanks to Stefano Ferrarini of Mantova, Italy, for calling my attention to this overlooked group. Linguistically, these are ordinary members of the Pearic group of the Eastern sub-branch of the East branch of Mon-Khmer of Austroasiatic

[6] Moreover, as we pointed out in MT-10, Julio Mercador's research on the rain forest and its occupancy by humans suggested that in some cases short stature can be associated with rain forests. Not to forget the curious old observation that islands also 'produce', 'induce' or 'select for' both short stature and large! Compare the wee Sicilians or the 'dwarf Japanese' (according to the Chinese) with the big Polynesians or highland Scots. In America in the 20th century the Sicilians got bigger, as the Japanese have recently.

builders who sailed their canoes from eastern Africa (southeast Africa actually) directly to Australia **and thence** towards India. Thinking little to come of that hypothesis, I lost the reference.

Before tackling the vexing question of **Papuan and Australian relations** and priorities, suffice it to say that the two **are frequently paired physically** with the expectation that they form a race or a segment of mankind something like a race. When geneticists form their family trees, Papuan is usually Australian's nearest relative and vice versa. But such a pairing is not usual in cultural matters where the great Melanesian realm is apt to be as much like Papuan and it is quite rare in linguistic studies. Alfredo Trombetti and Morris Swadesh are the exceptions in proposing a genetic relationship in language. And Swadesh only did it once, as I recall. Neither Greenberg nor Wurm ever proposed it, although Greenberg would sometimes say that he thought the two would eventually be related to each other. (No doubt an intensive search of more than a century's worth of literature in minimally seven languages would turn up another venturesome fellow.)

Sundry considerations point to a series of more specific problems which we suggested different speakers might focus on at the conference. The list here does not exhaust the possibilities but hopes to define the universe.

1. Do **Kusunda** or **Nihali** have linguistic kin in India? Or the Andaman islands? Do any of these three have any outside linguistic relatives?
2. Since **castes in India** tend towards endogamy and castes behave like tribes or populations, are lower castes more akin to 'foreigners' genetically than to their 'own' ethnic group; dialect, language or tribe? If so, which foreigners?
3. Does the **evidence of sub-strata** in Indic, Iranian, Dravidian or other languages point to cognations with any outside groups or do they point to some new genetic group or several or some isolates (e.g., Kusunda, Nihali)?
4. Does the controversial phylum called **Austric** hold together**?** Is lexical evidence lacking or still lacking? What grammatical evidence might hold it together? Might Austric be related to Nihali or Sino-Tibetan or Indo-Pacific?
5. Is it possible to draw a biological **phylogeny** or bio**genetic** family tree of Southeast Asian **populations?** How about including the peoples of the Southwest Pacific? Or India?
6. Are there **archeological sites** in greater India or southeast Asia of **50,000 + ?**
7. Are there archeological **cultures or horizons** which appear to correlate with major linguistic group or major races? (Never mind Lapita & Polynesians)
8. **Can Indo-Pacific be defended?** Where is the hypothesis the weakest? Can Andamanese and Tasmanian be included? Do they have any other kin?

9. Is **Tasmanian** related to both Australian and Indo-Pacific? Can it not be classified because the data are scarce and imperfect?
10. Can **Australian and Papuan** (in a narrow sense) **be related?** Can Indo-Pacific as Greenberg conceived it be related to Australian? Is Australian simply another branch or sub-phylum of Indo-Pacific?
11. Some of the Kusunda, the Andamanese, the Semang of Malaya, the Aeta and others of the Philippines, and some Papuan highlanders have been described as **quite short or as Negritos or as Pigmies.** Can we choose between the theory that they are the **"Australoid remnants"** of early settlements and the theory that their diminished size is primarily a product of living for a long time in the **tropical rain forests** characteristic of much of the India to Fiji region? (Cf Mercader's book). Or are both theories right? Or both false?

Apropos of the last question a new understanding is relevant; it seems that the extinct tiny people of Flores in Indonesia may have been *Homo sapiens* after all; the matter is clearly quite unsettled. (David Pilbeam, personal communication, March 26, 2007). Since insular Southeast Asia is one of the prime tropical rain forest areas of planet Earth, the sylvan hypothesis of short stature might gain more support. The promised follow-up with DNA data has not been realized on Flores

TAXONOMIC ISSUES AND SUMMARY

To sum up the competing taxonomic hypotheses[7] we have two primary migration theories to list in greater detail and we need to sketch the linguistic universe for the greater Indian Ocean region for information's sake.

BOREAN: A migratory hypothesis or large scale 'demic diffusion' proposal. It is primarily a marriage of linguistics and archeology but one of its key tenets is physical, i.e., the association with full scale or fully evolved *Homo sapiens sapiens* status. It dates from 50,000 BP in the Nile Valley, although it probably began in Ethiopia earlier than that.[8] From Egypt it crossed into Palestine, thence by lowland routes to Baluchistan, thence to central Asia (Uzbekistan, Kazakhstan), thence to eastern Europe and finally western Europe. In central Asia it bifurcated with the eastern 'wing' going around the Himalayas probably crossing Mongolia and dipping into China before passing through eastern Siberia, crossing the Bering Straits and entering North America well before the Clovis horizon and reaching Tierra del Fuego probably also before Clovis.

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[7] This does not exhaust the taxonomic possibilities in either physical anthropology or linguistics! Far from it. Cf Blazhek's paper for a fuller list of proposals just involving Dravidian and Australian. The literature on "race classification" and demographic movements is old and full in physical anthropology. My choices of Coon and Trombetti are basically heuristic, since they are both full with a broad sweep and hold the possibility of being fruitful. Borean and Levantine were invented by Richard Klein (who has not accepted the label 'Borean') and by Hal Fleming whose former "the Tropical hypothesis" was renamed Levantine, an unusually inept label. Klein proposes only one migration; it is not Levantine.

[8] The date and location in Egypt explicitly is from Ofer Bar Yosef, personal communication, 2003.

Since Borean or **Aurignacian** (as some call it) was in Palestine by 45 kya, why did it go around Anatolia and the Caucasus (where it arrived ca 35 kya)? The reason seems to be Neanderthal blocking the way. One will note that the proposed Borean route, while it is based on archeology, also reflects the rough distribution of *Homo neanderthalensis* outside of Europe. He may not have gone gently into that dark night!

Borean's sub-phyla are strongly associated with two traditional races, viz., the Caucasoids and the northern Mongoloids. Presuming that the Amerinds can still be called 'Mongoloid' of any sort, there are very few Borean groups which fail to fall into those broad 'races'. In the older genetic family trees, such as Cavalli-Sforza's HGHG (before DNA began defining physical trees), this statement still would hold true. Only the southern reaches of Afroasiatic, such as Chadic and some of Omotic might fail to be substantially or predominantly Caucasoid (as defined by Cavalli-Sforza). The implications of this correlation are very interesting but cannot be pursued here.

Linguistically, Borean consists of the following 'families' or larger family groupings: **Traditional Nostratic** (Afroasiatic; Kartvelian, Elamitic, Dravidian, Greenberg's Eurasiatic [Uralic, Altaic, Chukotian, Gilyak, Japanese, Korean, [9] Eskaleut, and Indo-European + Etruscan]), **Vasco-Dene** (Bengtson's Macro-Caucasic [Basque, Caucasic, Burushaski], Tibeto-Burman[10], Yenisseian, Na-Dene), **Amerind** (Greenberg's 1987 proposal) and **Sumerian.**

LEVANTINE: It is based in some fossils, plentiful archeology, and the linguistic 'left-overs' after the Borean or Aurignacian hypothesis. Its purported major weakness is the presumption that our species was not yet fully 'modern' (whatever that means) and therefore not capable of symbolic behavior or that cognition characteristic of fully 'modern' men. Its linguistic connections are far from being worked out, partly because of the huge geographic separation of Sundaland from west central Africa and partly because those relationships would be almost by definition the most remote in linguistic prehistory. Around 50,000 years earlier than the Borean clan's dispersal.

Proposed dates for Levantine are around 100,000 BP and its key fossil sites are Qafzeh and Skhul V in Israel. It is known to have been superceded in Israel at least by Neanderthals around 75,000 BP and perhaps for that reason is seen by many as a 'dead end' or isolated occurrence of its species in the Levant. While it is opposed by Klein's hypothesis and ostensibly by Brooks' recent hypothesis, it is supported by Harrod's magisterial review of relevant archeology. In brief the cultural associations of Qafzeh and Skhul-V are not consistent with a limited one time venture into Israel.

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[9] Ainu is not included here. It was in Greenberg's Eurasiatic. Bengtson's proposed Austric status for Ainu I find a bit more convincing, mostly on archeological grounds. Linguistically, it is a stand-off! Following John Colarusso, I include ancient Gutian and Kassitic in Caucasic. Meroitic of the Sudan remains a mystery.

[10] Formerly called Sino-Tibetan. Cf George van Driem's correction (in this volume) and return to the original name, focused on the eastern Himalayas rather than China.

The proposed path for Levantine runs up the Red Sea coasts and the Nile Valley into the Levant and into north Africa and the Sahara and along the Indian Ocean coasts to Oman, to India, and coastwise to the Andamans, thence to Sundaland. Beyond Timor or the Celebes some sort of boating or rafting to Halmahera thence to New Guinea, thence to Australia. Or from Timor directly to northwest Australia. Melanesia was most likely settled initially from New Guinea all the way to Fiji (roughly the eastern boundary of physical Melanesians). Tasmania could have been settled from Australia or from the nearest Melanesia in New Caledonia.

Somewhere in this great initial expansion one area became a basic 'nesting area' for local change which finally emerged as **Austric.** One would bet on south China on distributional grounds. While the Austric area in general is almost as insular as it is continental, much of that appearance is due to the vast expansion of Austronesian throughout insular Southeast Asia and the insular Pacific in more recent times. Mainland Southeast Asia, especially China but most likely extending as far north as Japan and Manchuria, merges into the temperate zone and could have encouraged substantial physical changes to the immigrant Levantines. The many points of similarity between so-called northern Mongoloids and southern Mongoloids in physique, and genes, suggest that the Boreans on their march around India, into central Asia, and eastward towards the Bering Straits, encountered these Austric folks in several places and via genetic exchange or demographic absorption became somewhat more like the Southeast Asians and less like their western brothers, the 'Caucasoids'.[11]

Nevertheless, the vast expanse of the Levantine membership, commencing in 100,000 BP, contains **no one or two** central tendencies in physical phenotypes or genotypes. Melanesia in particular is a study in perplexing diversity what with inter-island traveling and trading plus local insular evolutions. Cf Steinberg's clinal maps of various islands and New Guinea later in this article.[12] But there is a far more important reason for a failure of racial or genotypic classification to be associated with Levantine. Levantine is **close to being proto-Human**, since it includes the great Indian Ocean region, already discussed, as well as Africa west of Ethiopia as well as most of Africa south of Tanzania (i.e., Bantu lands). It also includes the roots of Borean! If proto-Borean existed as of 50,000 BP in, say, Nubia or Ethiopia, its ancestor of 100,000 BP would have been related in all probability to the Levantine group which was beginning its diaspora from somewhere not far away in eastern Africa. One other African group, Khoisan, was just over the hill in East Africa; it

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[11] This analysis is not essential to the basic Levantine hypothesis but I venture here because of the fascination of the basic problem presented before of the bifurcation or dualism of the Boreans and the continuing problems of questions about 'race', especially the huge so-called 'Mongoloid' realm. For example the Gamma Globulin haplotype "fanb" (Gm ^{1,3,5,10,11,13,14,26}) which contrasts markedly with 'Caucasoid' "fb" (Gm ^{3,5,10,11,13,14}) is found as far apart as some western Indian castes and Japan –in diminished amounts in both cases. Almost everyone in between them has more of it and in mainland Southeast Asia "fanb" reaches to near 100%, including most Negritos and "aborigines"..
I am indebted to John Bengtson's paper for the vision of what a Nihali-Ainu connection could mean.

[12] William Howells, late of the Peabody Museum, agreed with the essentials of Coon's theory but without invoking the multi-regional theory or the fossil ancestors. He was most impressed with the problems of racial classification in Melanesia.

was possibly separated already from the Levantine group, including Borean, yet was contacted early-on by Boreans moving south, i.e., Cushites and/or Ongotans or Omotic (Somotic probably).

One notes that neither "fanb" nor any "Mongoloid" appearance is characteristic of NewGuinea south of the Austronesian-saturated north coast. As "fanb" is so characteristic of Austric in general and Austronesian in particular, its near complete absence from Australia, except a bit in the northwest, is noteworthy. If there were prehistoric contacts between Austronesians and north Australians, as some scholars propose, they would seem not to be heavy or involve much gene flow. They could involve important cultural borrowing, of course, via trade or ordinary friendly visiting

Levantine as a linguistic hypothesis includes the following language groups. These are not simply 'left-over' groups, once Borean is separated out, but rather groups between or among which specific connections have been made by various linguists, even including those linking Niger-Congo or Nilo-Saharan with India or Australia. In greater India we have **Kusunda** (Nepal), **Nihali**, and **Andamanese.** Eastern India begins the vast **Austric** realm whose principal parts are **Austroasiatic** (including Munda and Khasi of India, Mon-Khmer of mainland Southeast Asia but also the Nicobar Islands, Viet-Muong, et al) **Miao-Yao**, and **Austro-Thai.** [**Daic** and **Austronesian].** Farther east we have **Macro-Papuan** (possibly two phyla) with outliers in the Timor area, Halmahera, and Melanesia, and **Australian.** Now extinct, **Tasmanian** is claimed by Macro-Papuan and by Australian, depending on which scholar is talking. Greenberg linked it to Papuan in his Indo-Pacific hypothesis.[13]

However, Levantine also includes **Niger-Congo** and **Nilo-Saharan** and what we might call **early pre-proto-Borean.** Khoisan is not part of Levantine by anyone's proposal that I know of. It is not necessary to propose a migratory path for either of these phyla; they have not moved far from the Levantine homeland somewhere in the Khartoum-AddisAbaba-Nairobi triangle Possibly Niger-Congo derives from the initial move up the Nile Valley and from the 'left' wing which moved across north Africa, later descending through the Sahara and later, presumably during arid times, settling in the Sahel from Kordofan to Senegal. [14]

Looking at the distribution of language groups region by region gives a better feeling for their arrangement. Thus:

India has Eurasiatic of Borean dominant in most of the sub-continent, mostly in the form of Indo-European (Sanskrit, et al). Dravidian primarily in the south, is another branch of Borean but not Eurasiatic. Munda of Austric is the next in size; it is focused on eastern India. Kusunda and Nihali are isolates, while Andamanese is in the Indian Ocean, as is Nicobarese of Austroasiatic. Altogether India has 7 phyla or 8, including 3 Borean, 2 Levantine, and 2 isolates. Only Africa has as much deep

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[13] There are five group names beginning with '**Austr-**' which must confuse scholars frequently. The region needs a nomenclature agreement. Linguists are wont to change language names almost at will.

[14] How the Pygmy settlement of the rain forest took place cannot be known linguistically, unless a concerted effort is made to recover some elements of their original language from 'sub-strata' found in Niger-Congo and Central Sudanic languages now in or close to the rain forest. While it is perhaps most prominently presupposed among scholars, Niger-Congo is not necessarily the mother of ancient Pygmy. It is entirely possible that, if we ever reconstruct it, that it represents a **fifth major African phylum.**

diversity! Though India is often referred to as a "**cul de sac**", it can just as readily be seen as one of the great **crossroad** areas. The natural conclusion in prehistoric reasoning is that the greater the deep diversity in an area the more likely the time depth of its native or autochthonous parties.[15] Or *Homo sapiens* has been in India almost from the very beginning.

Southeast Asia as usually defined has two basic parts, viz., mainland and insular. Mainland is south China and its neighbors, Thailand, Burma, Laos, Vietnam, Cambodia, and Malaysia. Insular is the Philippines and Indonesia up to Wallace's Line. Lombok, Celebes (Sulawesi) and the Moluccas (Halmahera, etal) lie east of the great divide. Borean's Tibeto-Burman rules the northern mainland (Chinese primarily), while Austric holds the rest. If we extend insular Southeast Asia up to Timor or Halmahera, then Austric shares that area with around 30 languages which Greenberg classified as Indo-Pacific (but not in the same branches). So Southeast Asia is predominantly Levantine country with a heavy Borean presence to the north and a few wisps of Macro-Papuan or something like it in the far east. In terms of the Australoid problem a huge region of Austric speakers now stands between India and Papua and Australia with few hold-overs from the presumed first settlements, including a gap of 27 degrees of longitude and 22 degrees of latitude between Timor and the Andamans!

Greater New Guinea, including the islands of Melanesia up to Fiji, is tremendously diverse with at least 720 languages of Greenberg's Indo-Pacific, found mostly on New Guinea, and a large number of Austronesian languages[16] on the northern coasts and throughout Melanesia. Greater New Guinea is entirely Levantine.

Australia, except for the Aussies and crocodile wrestlers, is entirely Levantine. Its hundreds of languages (perhaps 500 in the 19th century) belong to one acknowledged phylum or family – Australian.

Tasmania had several languages, now extinct. It was entirely Levantine, except for Borean English predators who wiped out said languages. Tasmanian is controversial for two reasons: one, some say the data are imprecise and inadequate, hence unusable, and second, scholars are torn between a relationship with Australian and one with Macro-Papuan (Indo-Pacific). If it is possible to get DNA data from the few surviving "mix bloods" (Anglo-Tasmanian), that is devoutly to be wished for!

It is worth noting that the numbers for Borean and Levantine are highly dissimilar. Taking the estimated total for human languages in Ruhlen's GUIDE as "roughly 5000" and taking his phylum counts, it appears that the numerical

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[15] 'Deep diversity' sounds romantic or flatulent. What it means is simply that the farther language groups are from each other descriptively the farther they are historically. The failures or controversies of glotto-chronology notwithstanding this is an old principle of historical linguistics. Several areas in Africa, like Kordofan or north Tanzania or north Cameroon-Chad, or the Caucasus or the Northwest Coast of North America or central Mexico have such deep diversity. Old dialect areas like Hindi or Italian or Arabic are not as deep, although dialect areas become clusters of closely related languages like Bantu or Chinese are less shallow yet not 'deep'. These different and well-established notions correlate very well with glotto-chrono-logy. Similar notions are found in biology, witness the "famous case of the Siberian birds", often cited.

[16] To count them has proven impossible, short of making the count a major project. There are at least 300 of them. Micronesia and Polynesia, interestingly enough, have far fewer languages.

superiority of Levantine is overwhelming.[17] Given Austric's 1000+, Macro-Papuan's 720, Australian's 170, Andamanese's 4 (Ruhlen) or 13 (Usher) plus Nilo-Saharan's 138, and Niger-Kordofanian's 1064, the total of about 3100 equals roughly 62% of all human languages.A third of Levantine is in Africa (39%), while nearly two thirds is in the Indo-Australian realm. While the great numbers argue for considerable historical depth in situ, there are other considerations that modify that conclusion.[18]

With the sharp focus of the Aurignacian (Borean) hypothesis on getting to Central Asia and Europe we cannot lose sight of the probable interactions the migrants had with people who were already living along or near the route. We are accustomed to acknowledging the presence of Neanderthals along much of the route but not to proposing that earlier *Homo sapiens sapiens* peoples were there too. It seems as if we were committed to a general theorem, perhaps to go along with the notion of **monogenesis,** that there was only **ONE** exodus or migration from Africa. That presumption or assumption badly **needs to be tested!** The sheer diversity of the tropical lands suggests that that presumption is **false.**

Charts and Maps

Figure 4.10.1 "General Genetic Picture of Asia". Brief family tree of Asian populations, based on traditional genetic markers (ABO, MNS, Duffy, Rhesus, etc.), taken with thanks from Cavalli-Sforza, et al, HGHG (*History and Geography of Human Genes)*1994, p.225 . To be noticed is the clear break between "north Mongoloids" and "Caucasoids" on the one hand and southeast Asians on the other (including the south Chinese). With thanks to Princeton University Press

Figure 4.9.2 "Physical anthropology of Asia, based on Bowles' (1977) summary". Most noticeable is the closeness of Onge Andamanese and southeast Asians which is not what Australoid theory would predict. Based on Cavalli-Sforza, et al, 1994, p. 224 . With thanks to Princeton University Press.

Figure 4.9.3. The same as Fig.4.9.2, except a different "principal coordinate".

Map 1. "Distribution of Gm ^{3,5,10,11,13,14} in Europe" This is "**fb**" and shows the preponderance of this haplotype in Europe. The dominance extends to India and North Africa. Much is present in Ethiopia, the Sahara, and central Asia.. Taken with

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[17] Everyone would agree that the 'real' total of human languages is more than 5000; 6000 is often mentioned in the press or elsewhere. But much depends on how dialects are treated. For example, Indo-Hittite would have more members if the Italian dialects were counted properly. Semitic would increase if Arabic dialects were counted. Even English and German are counted poorly; for example both Scots and Jordy (Newcastle) are virtually unintelligible to Americans, Swiss dialects are quite different from standard High German, French Canadian 'patois' (Quebecois) is far from Parisien. But most counts are not as careful as Ruhlen's; he also lists each member of each group which others rarely do and tends not to list languages which are known only by a name but with no data. Thus some say that Australian has more than 500 languages –many losing out in the competition with English – but Ruhlen's careful count is only 170.

[18] In the forested and insular conditions of Southeast Asia, New Guinea and Melanesia we have the ideal conditions for isolation, the *sine qua non* of linguistic **heterogeneity**. The contrast with the remarkable homogeneity of the Nile Valley –five Coptic dialects after 3300 years of recorded Egyptian –is telling. Non-tropical Asia and Europe were also subject to vast empires and great religions which fostered **homogeneity.**

thanks from Arthur G.Steinberg and Charles E.Cook. 1981. *The Distribution of the Human Immunoglobulin Allotypes* . Oxford University Press, p.229.

Map 2. "Distribution of Gm ^{1,3,5,10,11,13,14} in eastern Asia. This is "**fanb"** and shows the preponderance of that haplotype in southeast Asia. That dominance extends all the way to Hawaii. Taken with thanks from Steinberg and Cook, 1981, p.236.

Map 3. "Distribution of Gm "**fanb**" in eastern New Guinea and Melanesia. Taken with thanks from Steinberg and Cook, p.240. Shows an important cline from Papuan (or 'NAN') to Austronesian (or 'AN') or vice versa.

Map 4. "Distribution of Gm ^{1,5,10,11,13,14,17} in Papua New Guinea. Taken from Steinberg and Cook, p.239. The cline is rooted in **Asmat** in southwestern New Guinea (or Irian Jaya nowadays). The contrast with "fanb" is very strong. I equate Gm ^{1,5,10,11,13,14,17} to **za;b0b1b3b4b5** of Cavalli-Sforza's list of Gm frequencies. It may be a mistake. In any case this allele is not important in Australia, says Steinberg. We note that there are no less than five allotypes which start with **zab-**. Some are prominent in Africa. Thanks to Oxford University Press for the five maps.

Map 5. "Distribution of **Inv** ^{1,2} on Bougainville, Solomon Islands". Taken from Steinberg and Cook, p.242. Bougainville is about the size of Connecticut and Rhode Island together. Eighteen villages or tribal areas were sampled in a 150 mile stretch and a 50% change was recorded from one end of the island to the other. Diversity! Eight NAN ('Papuan') languages were spoken on Bougainville and fourteen AN (Austronesian). Diversity!

Proposed Membership of Indo-Pacific: After Merritt Ruhlen's GUIDE.

EAST OF PAPUA, I.E., MELANESIA

New Britain: Sulka, Kol, Wasi, Anem, Panaras, Baining, Taulil, Butam.
Solomon Isles: Yele, Kazukuru, Guliguli, Dororo
Central Solomons: Bilua, Baniata, Lavukaleve, Savosavo
Bougainville: Nasioi, Nagovisi, Buin, Siwai, Konua, Keriaka, Rotokas, Eivo
Reef Islands-Santa Cruz: Aiwo, Santa Cruz, Nanggu

WEST OF PAPUA, I.E. EASTERN INDONESIA

NorthHalmahera: Ternate, Tidore, Galela, Tobela, Loda, Ibu, Sahu, Modobe, Tabaru, Pagu, West Makian
Timor: Oirata, Fataluku, Kairui, Bunak, Kolana, Tanglapui.
Alor: Kui, Woisika, Abui, Kelon, Kafoa, Kabola; Makasai
Pantar: Blagar, Tewa, Nedebang, Lamma

Total: 55 languages to the East and West of New Guinea

Branches of Indo-Pacific On New Guinea

Trans-New Guinea = 505 lgs (includes Timor-Alor-Pantar)
West Papuan =13 lgs. (plus 11 on Halmahera)
East Bird's Head = 3, to wit, Mantion, Meax, Meningo
Geelvink Bay: 5 lgs. Yava, Turunggare, Baropasi, Bauzi, Bapu.
Sko = 8 lgs. (A) Sko, Sangke, Wutung, Vanimo, (B) Krisa, Rawo, Puari, Warapu
Kwomtari-Baibai = 5 lgs. Pyu and (A) Kwomtari, Fas, (B) Baibai, Biaka
Arai = 6 lgs. Rocky Peak, Iteri, Bo, Ama, Nimo, Owiniga
Amto-Musian = 2 lgs., Amto, Musian
Torricelli = 48 languages, including the famous Arapesh (3 lgs)

Sepik-Ramu = 98 lgs. With four primary sub-branches
East Papuan = 23 lgs, including all the Melanesian examples above.

MACRO-PAPUAN (my coinage) = New Guinea and its neighborhood
Grand Total = 727 lgs
Indo-Pacific also inludes
TASMANIAN
(extinct but had several languages)
and
ANDAMANESE

Great Andamanese = (9 extinct, 1 living lg)
South Andamanese = Onge, Jarawa, Sentinel, although the language has never been recorded because the Sentinelese are fearful and therefore hostile to outsiders.

Timothy Usher has suggested that Halmahera is linked to West Papuan, East Bird's Head and a few others, while the Timor-Alor-Pantar lot connects to the Trans-New Guinea sub-phylum and Australian, Tasmanian and the Melanesian lot These two moieties are not necessarily related to each other but the Halmahera lot is linked to Andamanese and Kusunda of Nepal. This very interesting proposal is supported rather dramatically by the island-hopping routes suggested by the insular shelves (bathymetric contours) in eastern Indonesia; one leads to Halmahera, thence to Bird's Head, while the other leads to southern New Guinea and/or northwestern Australia. The 'route' bifurcates near Flores, thence via the Celebes to Soela Strait to the Moluccas and Halmahera, while its southern half or wing goes directly to Timor, thence to the Arafura Sea to either New Guinea or Australia (via Melville and/or Bathhurst Islands to Darwin).[19]

If this suggestion is supported by further investigation, it will be a major break through on the road from India to Fiji and Tasmania!

[19] As measured by the 100 meter contour lines (under present water) there is not a complete land bridge between islands during low water (glacial) times, but the distance between islands would have been much smaller than they are now. Another feature of the oceanography of our problem is the ocean currents, the prevailing large ones. Taking the northern route to Halmahera, one could very nearly get to Halmahera or at least the Moluccas by **drifting.** That is, **via the Equatorial Counter Current.** But between Timor and Darwin or the Arafura Sea the major current **opposes drifting eastward**. Leaving Timor, one could end up in Bali or Zanzibar!. That is where the **South Equatorial Current** could take one. However, were the Torres Straits between New Guinea and Australia to be blocked by a land bridge at water lower than 100 meters, then the South Equatorial Current would have to be re-routed somewhere. There is a lot of Oceanography needed here! The prevailing winds would blow from Timor **towards** New Guinea in January, but **away from** Australia or New Guinea in July. How did they blow during the Pleistocene? We solicit answers! This reminds me of the **dhow trade** in the western Indian Ocean where prevailing winds (monsoon) have been so important to know.

4.10. General genetic picture of Asia

The tree constructed from 39 Asian populations or population pools is given in fig. 4.10.1. The genetic documentation includes 68.6 genes, on average. There are 2 major clusters: a smaller one, consisting of 7 populations from Southeast Asia, and a larger one including all the rest. North China and South China belong to different major clusters, thus confirming the suspicion that, despite millennia of common history and many migrations, a profound initial genetic difference between these two regions has been in part maintained.

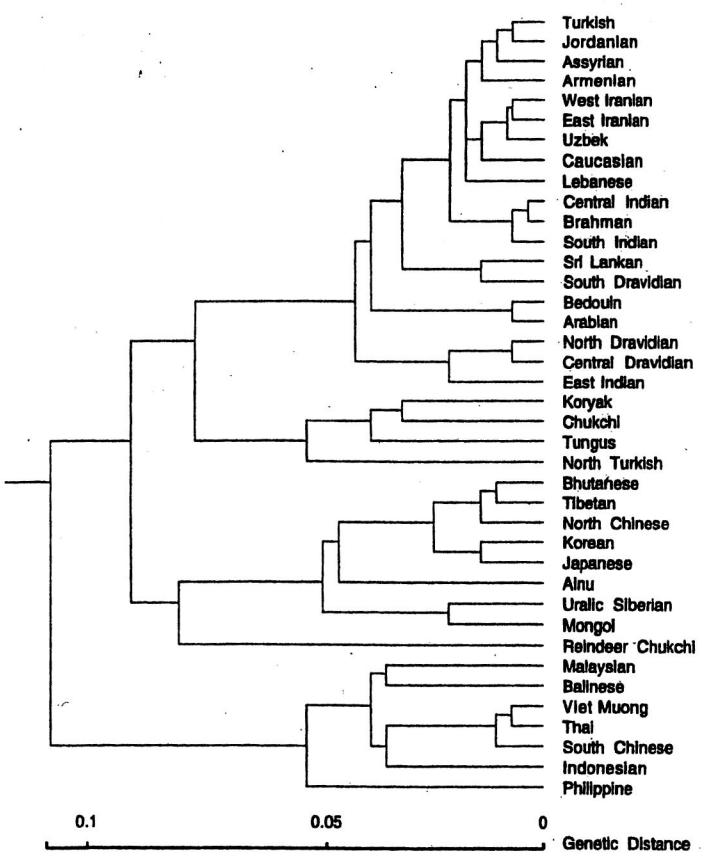


Fig. 4.10.1 Genetic tree of 39 Asian populations.

The larger cluster contains three subclusters.

1. A small subcluster comprises four populations from the extreme northeast: Koryak, Chukchi, Tungus (Even), and North Turkic. North Turkic speakers include the Yakut, Tuva, Altai, Dolgan, and others, as explained in more detail in section 4.11. Other northern groups, like Uralic-speaking Siberians, associate with the next subcluster. Reindeer Chukchi, instead of associating with other Chukchis, are an outlier of the next cluster.
2. The northern Mongoloid subcluster includes six populations from East Asia and three from the northeast (Uralic-language speaking Siberian, Mongol, and Reindeer Chukchi) that are missing in the previous subcluster. The limit between North and South China was drawn in the middle of China and, as we have seen, South Chinese join Southeast Asians, while the North Chinese associate with Koreans, Japanese, Ainu, Bhutanese, and Tibetans. We may surmise that the last two originally came from the north, thus explaining the association (see sec. 4.4).
3. The largest subcluster, consisting of 19 populations, is sharply separated from the others and includes all West Asians and South Asians in the sample. It is clearly Caucasoid, though one population from Central Asia, the Uzbek, may be more mixed with Mongoloids than the others. The two Arabian groups pair together and form a small outlying cluster by themselves. Indians tend to divide into two groups and are examined in greater detail below.

The tree thus confirms the major features of the world tree, while it shows some new features with the introduction of more populations into the analysis. The division into two main clusters of Caucasoid and Mongoloid

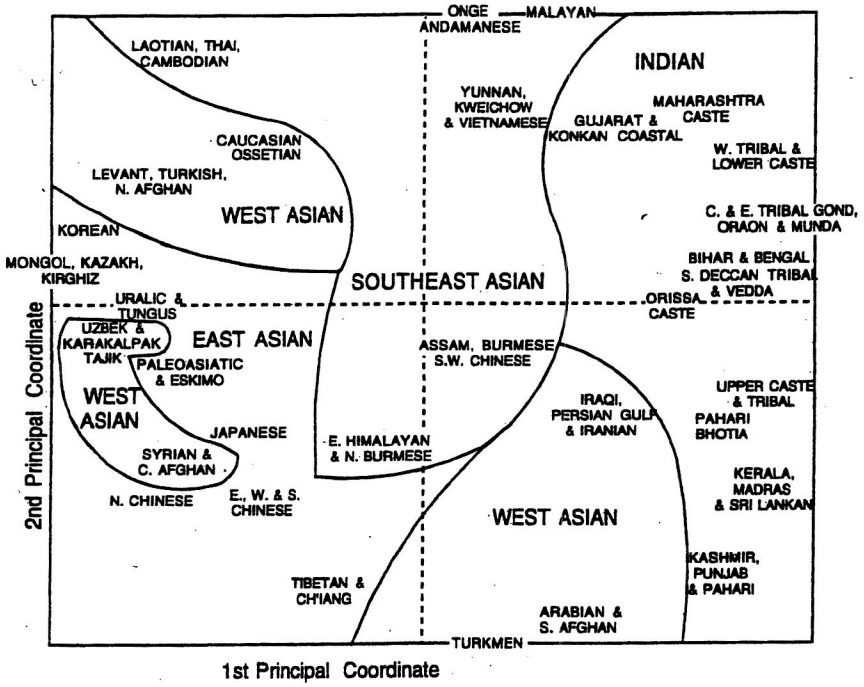


Figure 4.9.2

HGHG

Fig. 4.9.2 Physical anthropology of Asia, based on Bowles' (1977) summary. First (horiztonal) and second (vertical) principal coordinates. N., North; S., South; C., Central.

clustering the populations from West Asia, which seem to form three clusters; but the third PC clusters them successfully (fig. 4.9.3).

Looking at individual measurements, stature is lowest in South and Southeast Asia, as might be expected because of the well-known negative correlation of stature and temperature (Roberts 1973). In agreement with this, the first principal component is especially sensitive to overall size. By contrast, face and nose breadth, indicators of Caucasoid/Mongoloid admixture, show an east-west gradient.

The east-west gradient is especially high in the speakers of Turkic (Altaic) languages. This is partly explained by the history of migrations in and from the central steppes. The first migrations moved from the western steppes of the southern Volga toward East Asia and South Asia (as well as Europe) in the third to first millennia B.C. until Altaic-speaking peoples (Hsiung-nu, Turks, and Mongols) reversed the dominant direction of gene flow in the steppes, making east-to-west flow dominant. These people also moved toward the south at about the same time. The very high geographic mobility of the

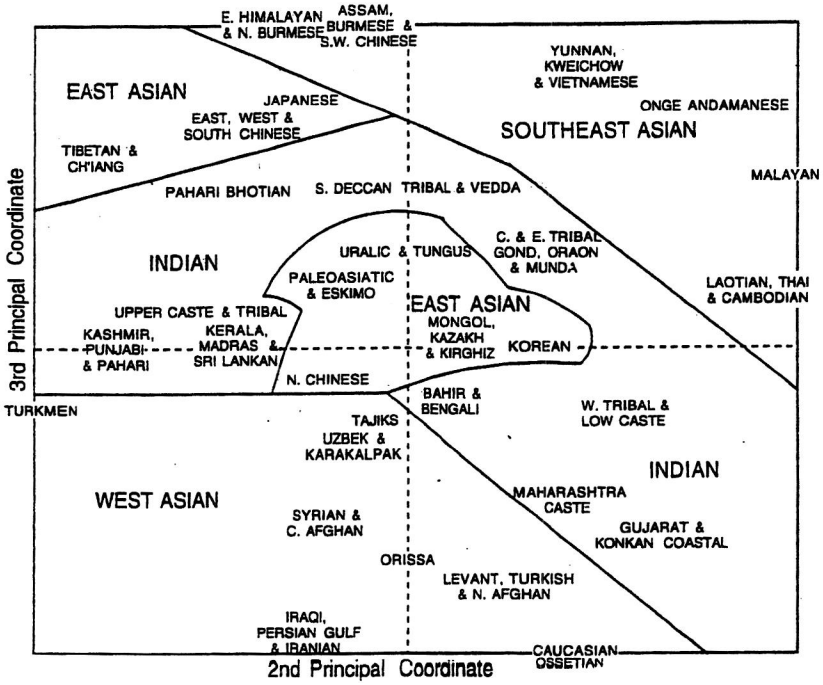
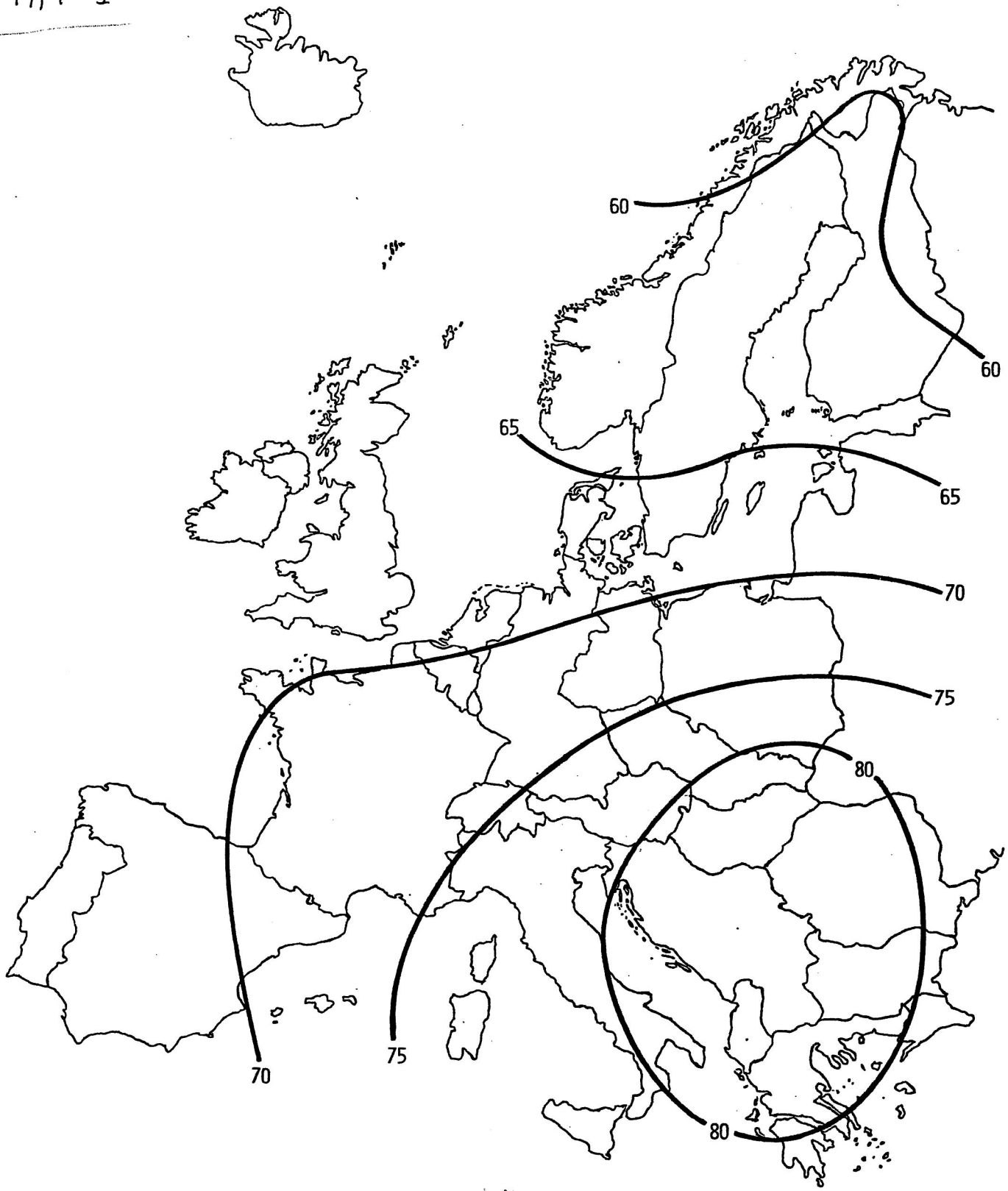


Figure 4.9.3

HGHG

Fig. 4.9.3 Physical anthropology of Asia, based on Bowles' (1977) summary. Second (horizontal) and third (vertical) principal coordinates. N., North; S., South; S. W., South West; C., Central; E., East; W., West.

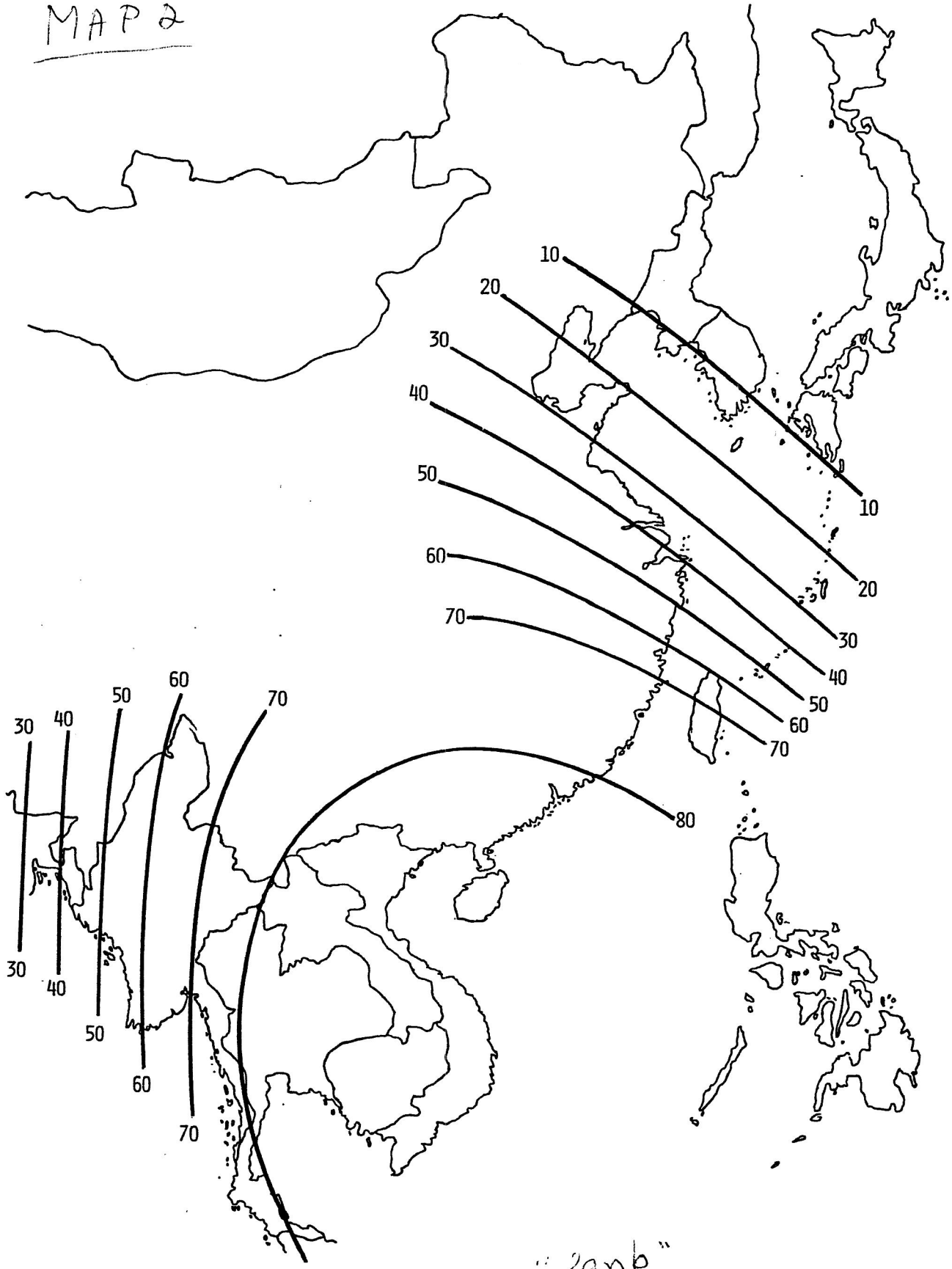
MAP 1



3 Distribution of $Gm^{3,5,10,11,13,14}$ in Europe

"3b"

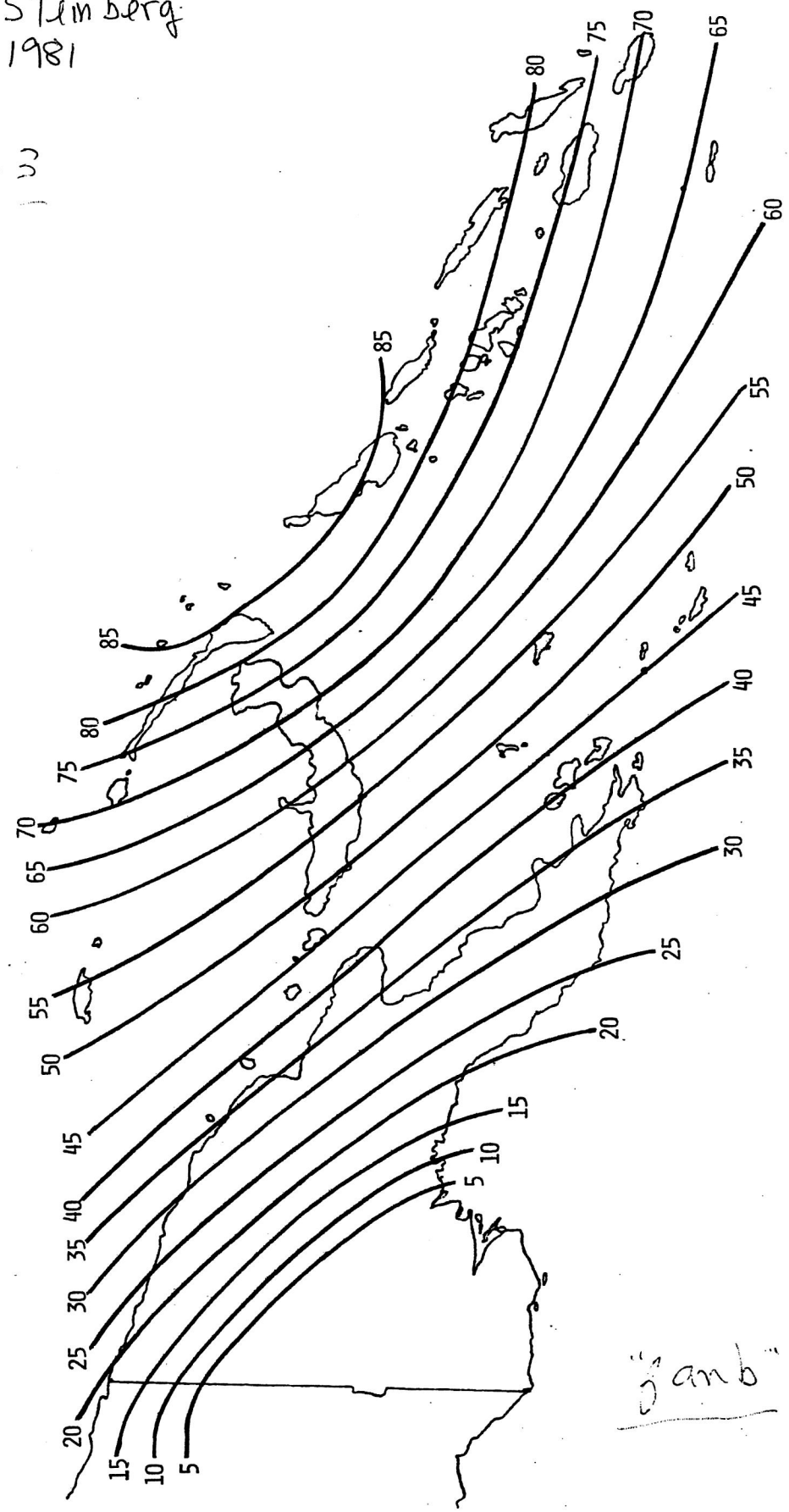
229



10 Distribution of $Gm^{1,3,5,10,11,13,14}$ in eastern Asia

A. Sternberg
1981

Map 2

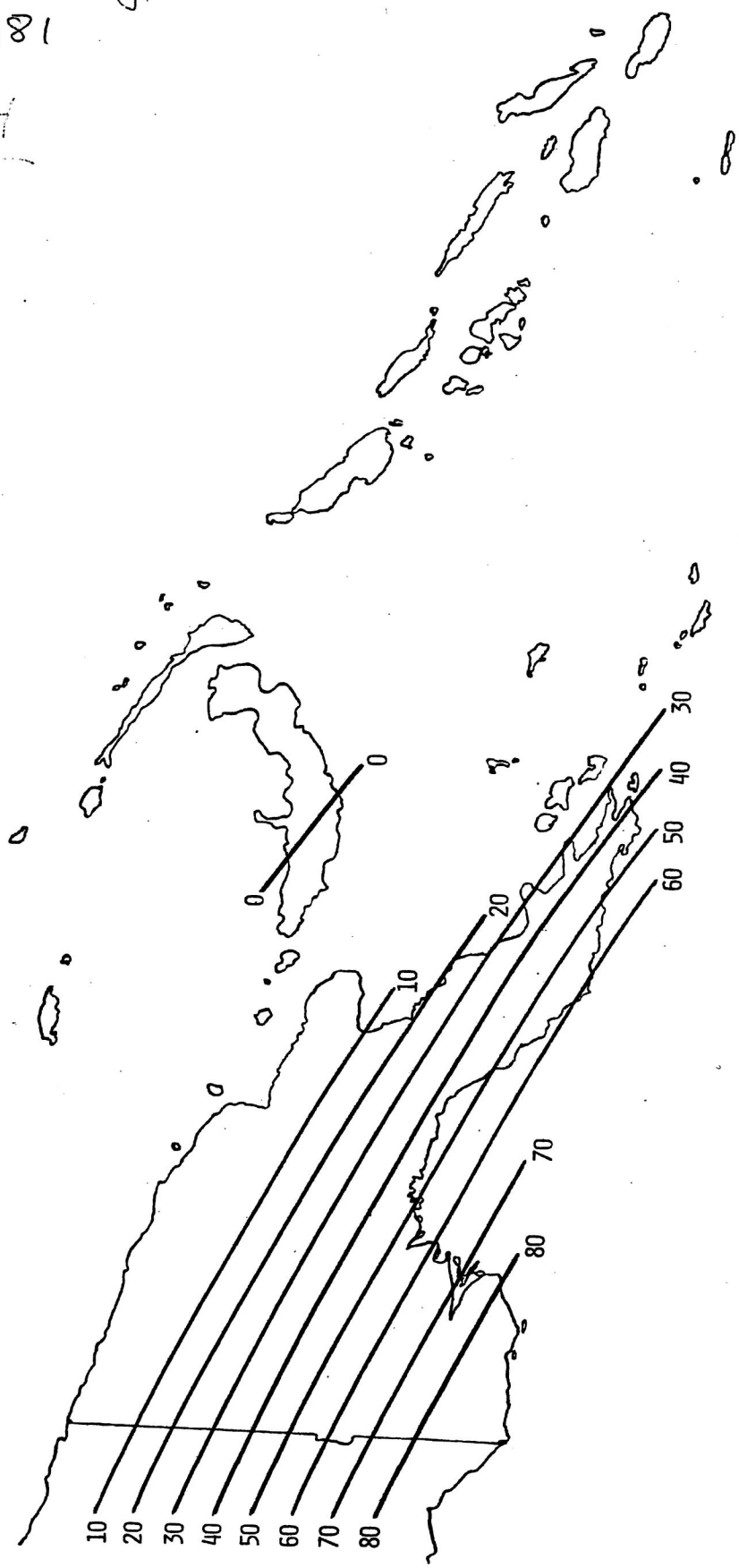


14 Distribution of *GM*[1,3,5,10,11,13,14] in Papua New Guinea and the Solomon Islands

240

A. Stemberg, 1981

MAP 4

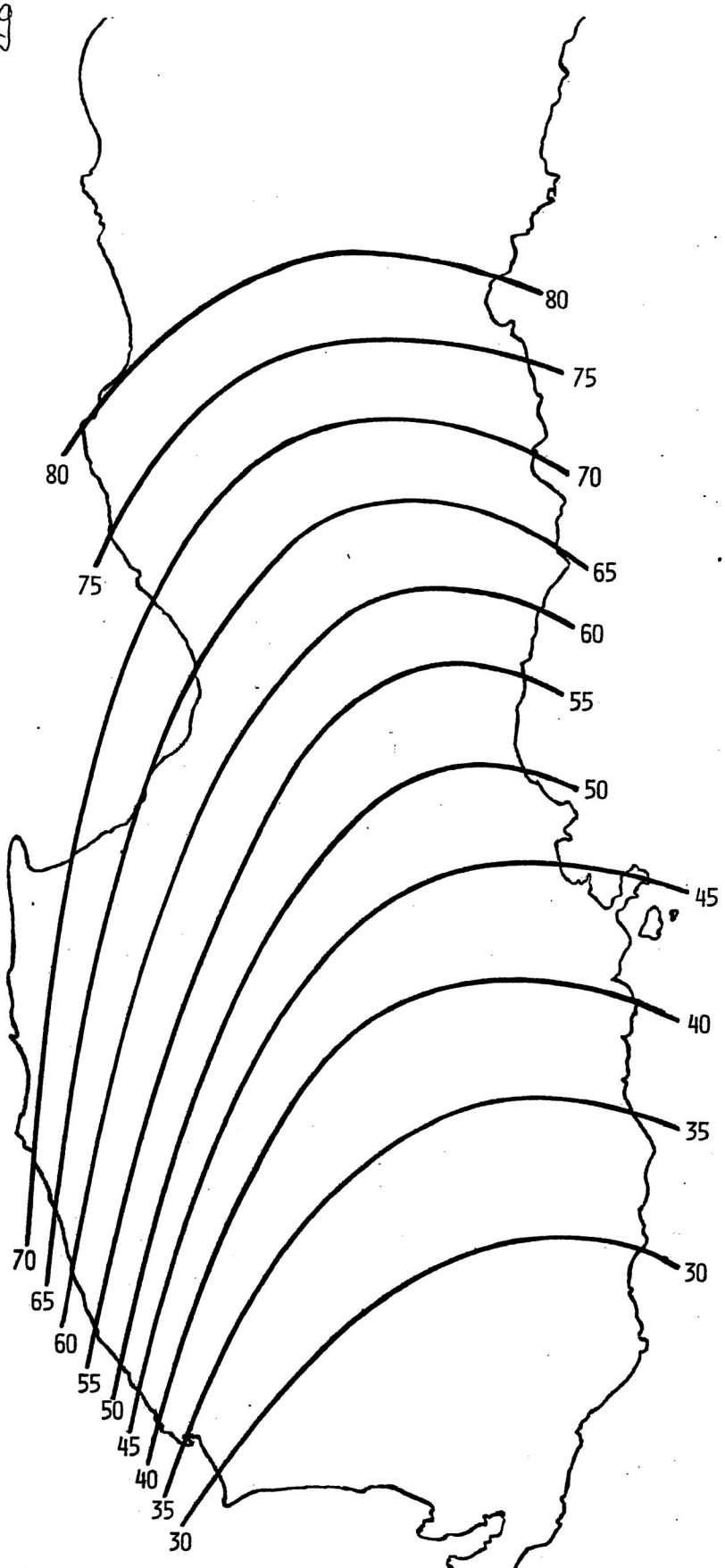


13 Distribution of *Gm*[1,5,10,11,13,14,17] in Papua New Guinea

239

A. Steinberg
1981

MAP 5



16 Distribution of *Inv*$^{1.2}$ on Bougainville, Solomon Islands

Some notes on the papers and the scholars behind them

The following attended the conference:

Michael Witzel. The Host. Read a letter from Asha Mundlay and presided over the Conference and ASLIP's Annual Meeting.

Hal Fleming. Generally introduced the topics and was full of questions.

James B. Harrod. Went back to Maine and did a tremendous amount of research. His paper undoubtedly fills a large gap in our knowledge. Magisterial!

Alison Brooks. Gave a great "power point" lecture which was akin to a symphony, inspiring but impossible to take notes on. Archeology, genetics, et al.

Jonathan Morris. Trombetti's theories re Indo-Pacific may have been the earliest. With Gatti we are given some data to examine and evaluate

Franklin Southworth. A master Indologist digs deep into South Asian linguistic history and comes up with some surprises..

George van Driem. Linguistics and (bio-)genetics combined in a thorough examination of Tibeto-Burman and Austroasiatic.

B.K.Rana. In the greater Himalayan context what is the significance of the Kusunda language and the people who speak it and their ancestors and kin?

John Bengtson. Austric is almost as venturesome as Indo-Pacific, but adding Nihali and Ainu to that? John tackled the problem squarely.

Peter Underhill. Another "power point" symphony. Pure (bio-)genetics with many connections between populations from Africa to the rest of the world and among them. The African diaspora was never in doubt.

Paul Black. Came as an expert on Australian languages but never got a chance to comment because his topics came up too late for him to assimilate.

Paul Whitehouse. His very thoughtful comments came after the conference because he said he agreed with Usher on Australian-Papuan relations.

Vaclav Blazhek. After reviewing the literature on Dravidian's external relations, he took on the Australian problem. His evidence is to be read.

Timothy Usher. The 'life of the conference' during many discussions. Reconstructed Greater Andamanese phonology and ventured an informal feeling that Greenberg's Indo-Pacific might be broken in two.

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PERIODS OF GLOBALIZATION OVER 'THE SOUTHERN ROUTE' IN HUMAN EVOLUTION (AFRICA, SOUTHWEST ASIA, SOUTH ASIA, SOUTHEAST ASIA AND SAHUL AND THE FAR EAST): A META-REVIEW OF ARCHAEOLOGY AND EVIDENCE FOR SYMBOLIC BEHAVIOR

As a contribution to "The 9th Roundtable on Remnant Languages of South Asia, South East Asia and Sahul Land" sponsored by the Association for the Study of Language in Prehistory with the support of the Harvard University Asia Center, I was asked to review and summarize archaeology that might substantiate a *Homo sapiens sapiens* out-of-Africa dispersal on the Southern Route to Southeast Asia and Sahul.

Although my primary interest is in the evolution of art, symbol and language over the past two to three million years, I was, perhaps, assigned this task because I am not an academic or professional archaeologist and might gather and synthesize the data with a refreshing naiveté. The challenge was daunting and as comprehensive as I have attempted to be in this study, I fully acknowledge its limitations in advance.

Method. First I conducted a basic literature search of research articles, books and websites. Since I'm an intuitive, holistic, and visual thinker, I then catalogued the results of this search into Microsoft Word tables. I did tables by region for Africa, Southwestern Asia ('Near East' or 'Middle East'), South Asia, South East Asia and Australia (Sunda and Sahul), and the Far East (China, Korea, Japan). For each region I listed selected archaeological sites by name and location, dating techniques (14C, TL, OSL, U-series, AAR, etc.) and dates by key strata; stone tool industry and characteristic tools; hominid fossils; and some characteristic fauna and note on environmental setting. The tables are organized by major time periods, such as Oldowan, Middle Acheulian, Middle Paleolithic/Middle Stone Age; these time periods are inescapably a mix of so-called tool modes and time periods.

In anticipation of future *Mother Tongue* conferences and because of my own special interest, I also noted evidence for symbolic behavior (palaeoart) for each period. For purposes of this review I define symbolic behavior by examples, after McBrearty and Brooks (2000) and Bednarik (2003, 1992), including:

- Regional tool styles;
- Self-adornment (perforated objects, beads, pendants, ornaments);
- Use of pigment;
- Incised, serrated or notched objects (bone, eggshell, ochre, stone, wood);
- Collection/manuporting of exotic objects (crystals, fossils, shells, non-local stone with 'aesthetic qualities');

- Geometric artifacts (circular and discoid objects, spheroids, rhomboids, triangles, etc.);
- Stone arrangements (heaps of stones, cairns, geoglyphs);
- Image and representation (engravings, petroglyphs, painted or sculpted anthropomorphic, zoomorphic or abstract figurations and other 'rock art'),
- Mortuary practices (bone modification, cannibalism, deposition, burials with or without grave goods, ochre, ritual objects)
- Gesture, mime and dance forms (although these are only identifiable by circumstantial evidence: 'dance floors', footprints, etc.)
- 'Marking traditions', geometric 'signs', circumstantial evidence for language

This does not preclude the intentional transformation of everyday 'utilitarian' behaviors into symbolic behaviors, such as underground mining, seafaring and even tool-making itself and its tools, which can acquire symbolic value in trade, status display, and ritual (e.g., Hampton 1999).

With the aim of comprehensiveness in the review of evidence for symbolic behavior or palaeoart I first reviewed and incorporated into the master tables items mentioned in two key inventories, Bednarik (2003, 1992) and McBrearty and Brooks (2000).

Obviously for no site selected to include in the database can I do more than sketch a capsule summary for the purpose of this overall meta-review. Inevitably, some source references are secondary; I have attempted to indicate the primary source by author and date as well as the secondary source. Finally, given the focus of the task, I did not develop databases for Europe or northern Asia, nor North or South America. I believe this actually had a good result, a view of human cultural and physical evolution from its source, Africa, rather than a chronologically late and hence seriously limited Euro-centric perspective. I leave for the future synchronizing in these other regions.

I do not confine the database to the debate on the timing and route of *Homo sapiens sapiens* dispersal from Africa. I believe that the current state of the archaeological evidence shows that there are waves of innovation of technological and symbolic behavior—and presumably global language—throughout the course of human evolution and in this paper I intend to contribute to that debate as well. Thus, I examine the entire span of the archaeology of human evolution from Pre-Oldowan to Upper Paleolithic (Later Stone Age) periods across the Southern Route. By recognizing earlier technological diffusions and convergent evolutions, I believe we can gain a better understanding of and develop more insightful hypotheses for Middle Paleolithic and later *Homo sapiens sapiens* 'dispersals' and innovations.

Once I developed tables by region, I then compared the tables across regions to detect dispersal routes, if any, during the course of human evolution. In looking for patterns and trends I assume neither diffusion of technology (or hominin species) out-of-Africa nor multi-regional co-evolution (convergent evolution). I wanted to see what would be substantiated by the database itself. If the site dating and technology shows a gradient over time, then we may hypothesize diffusion in the direction of the gradient. If there no gradient seems evident, then the likely hypothesis would be multi-regional convergent evolution. This study does not depend

upon either assumption and it does not begin by accepting any current position on the timing of out-of-Africa dispersals. The aim is to hue as closely as possible to the evidence.

Results. The extent of the database for review is indicated by region (number of archaeological loci [includes individual sites, but also sites with multiple assemblages, strata, sub-loci], number of source references, total pages):

- Africa (225,233, 85)
- Southwestern Asia (142, 126, 46)
- South Asia (Pakistan, India, Sri Lanka) (71, 43, 18)
- South East Asia and Australia (68, 73, 25)
- East Asia (China, Korea, Japan) (45, 52, 17)

Total: 551 archaeological loci
527 source references
191 pages of tables and references in the master-matrix

The total of references do not include all materials reviewed; some sites had insufficient dating to warrant inclusion and some documents had not relevant or redundant data so not incorporated into bibliography.

The complete Master Database tables for all regions with full bibliography are posted online at *OriginsNet.org/publications*. Only cross-region patterns and trends and a Synoptic summary of the master databases is presented herein.

Discussion by Period of Cultural Evolution. For the purposes of bringing some sort of order to the mass of data reviewed, I will summarize findings by time periods that correspond to distinctive technological modes *in Africa*. In other words, for example, when I refer to 'Middle Acheulian' sites, I mean sites that occur across regions in roughly the same time period as African Middle Acheulian sites, whether or not they have stone assemblages that exactly match those classified as 'African Middle Acheulian' stone industry.

Early-Oldowan (~2.0 to 2.6 Ma). Early Oldowan' (sometimes labeled 'Omo Oldowan' or 'Omo Tradition' or 'Pre-Oldowan') is a Lower or Early Paleolithic stone assemblage characterized by bipolar reduction, cores and flakes, flakes not retouched, and not yet standardized tool forms. Some authors do not consider these early stone tool assemblages as having an industry distinct from the later 'Classic' Oldowan industries, but my review suggests that Early Oldowan and 'Classic' Oldowan assemblages are sufficiently distinct and the definitions used to distinguish them appropriate. At the same time, one can acknowledge significant variability of technical skill represented across sites.

Although the evidence is sparse, some of this variability might be related to the apparent finding that some evidence of stone tools seems to be associated with Australopithecine fossils and other evidence with *Homo* fossils. In the light of current reports reviewed, I suggest that this early stage of Oldowan technology reflects two contemporaneous cultural traditions, one associated with *Australopithecus* and one with *Homo*, and the former I will term 'Pre-

Oldowan'—even if it is not 'pre'—and the latter 'Early Oldowan'. Although the evidence is very sparse—indeed, but one object, the Makapansgat manuport—symbolic behavior also seems to support this Pre-Oldowan/Early-Oldowan distinction as a valid designation for two distinct, though temporally overlapping, cultural traditions.

The earliest (and only—but we may anticipate more to come) evidence for 'Pre-Oldowan' occurs at Bouri, Ethiopia, 2.45-2.50 Ma (million years ago) *(HJ1999)*, which has cutmarked bones and bone shaft hammerstone breakage, but no cores or flakes, which may have been manuported away from the site, and this site is associated with *Australopithecus garhi (HJ1999)*.

While there is no evidence yet for Early Oldowan symbolic behavior/palaeoart, there is evidence for one Pre-Oldowan palaeoart object, the Makapansgat, South Africa, natural (not artificially modified), manuported red jasperite cobble, 'figurine of many-faces', associated with *Australopithecus africanus*, which seems accepted as the earliest example of palaeoart in the world *(DR1974; BR1998; BR2003)*.

Early Oldowan sites span ~2.0 to 2.6 Ma and are found in Ethiopia, Kenya, Zaire, Malawi, possibly South Africa, and are associated with *Homo sp. indet.*, *Homo habilis* and *Homo rudolfensis*. The earliest site is Ounda Gona, Ethiopia, 2.53 to 2.58 Ma *(SS2003, SD2005)*.

Several Asian sites have been proposed as sites for Early Oldowan dispersal out-of-Africa by *Homo habilis/rudolfensis*, including Yiron, Israel; Riwat, Pakistan; and Renzidong, China. My review indicates that there is currently no consensus on the artifactuality, dating, and/or tool industry classifications at these sites. This is currently the position of Ciochon with respect to Renzidong (*personal communication 2006*). There are apparently no hominid remains associated with these sites. Until new evidence, it appears that the Early Oldowan—like its contemporaneous partner, the Pre-Oldowan—originated in Africa but did not disperse into Southern Asia.

'Classic' Oldowan (~1.4-2.0 Ma). Classic Oldowan industries are characterized by bipolar and direct percussion, cores and flakes plus choppers, discoids, spheroids, and standardized small tools, including scrapers on flakes or fragments, rare burins and protobifaces, utilized unmodified flakes; and rare worked bone. They are first evident in East Africa sites, including Koobi Fora, Turkana Basin, Kenya and Olduvai Gorge, Tanzania. At Koobi Fora Oldowan industries are found in and just below the KBS Tuff dated 1.88-1.95 Ma *(IW2000, TI1988)* and are associated with *Homo rudolfensis* and at later occupations *Homo habilis (IW2000, TI1988; TN1985)*. Around the same time Oldowan assemblages are found at Olduvai Gorge, Tanzania beginning in Bed I, dating between Tuff IF 1.75 Ma and Tuff IA 1.98 Ma *(WR1991)* where they are associated with *Homo habilis (WJ1982)*. Subsequently the Classic Oldowan occurs in Ethiopia and South Africa.

Outside of Africa, Classic Oldowan industries occur at Dmanisi, Kura River Basin, Georgia, where multiple dating techniques give an age of ~1.7-1.8 Ma *(LH2005)*. The Oldowan assemblages are associated with hominid remains variously designated as closer to *Homo rudolfensis* than *ergaster*, and an intermediate name, *Homo georgicus*, has been proposed

(LM2006, LH2005). At a later date Classic Oldowan tools occur at Pabbi Hills, Upper Siwilak Formation, Pakistan, dating from 1.2-1.4 Ma to 'older dates' *(DR1998)*. No sites have yet been found in SE Asia, but they may assumed to be there, and older dates in South Asia as well, since Classic Oldowan sites are found in China, the earliest sites being those in the Nihewan Basin, northern China, and of these the oldest appears to be Majuangou at ~1.32 to 1.66 Ma *(ZR2004)*. No hominid remains have been found associated with these Oldowan assemblages. An earlier site at Longgupo may have a few tools but its hominid remains previously thought to be *Homo* have been argued recently to be *Lufengpithecus* ape fossils *(ED1997; HM2002)*

Based on these sites and dates, there appears to be a clear time gradient from Africa to China and we may posit a 'Southern Route' dispersal of Classic Oldowan industries from East Africa (~1.9 Ma) through Southwest Asia (~1.8 Ma) through Pakistan (>1.4 Ma) across South Asia and into China (~1.6 Ma).

With future fossil evidence these Asian sites will probably also be found to be associated with *Homo habilis* or *rudolfensis*, rather than *Homo erectus* as some have proposed, especially given the recently lowered dating in Africa for earliest evidence of *erectus* to 1.65 Ma with the revised dating of Area 123, Koobi Fora *(GP2006)*.

Potential evidence for symbolic behavior in the Classic Oldowan is sparse. Several objects are suggested and if the interpretations are confirmed, these would be the earliest evidence in the world of intentionally worked products of symbolic behavior. There are two items from Olduvai FLK North, Upper Bed I, ~1.75 Ma. One is an artificially pecked phonolite cobble, with cortex fully removed, pecked with four pits in a line and an encircling groove that results in a shape vaguely like a 'baboon-head' *(LM1971, LM1976; BR2003)*.

The other is a 'pitted anvil', a conical shape block, ~10 cm. in diameter, steeply flaked (high backed) all around its flat base, with a deep 9 mm pecked depression in its center *(LM1971, LM1976)*. It is described as an 'apparent cupule' *(BR2003)*; although similar objects at Gesher Benot Ya'aqov, Israel, while determined not to be the result of bipolar reduction, are presumed to be anvils for nutcracking *(GN2002)*. Similarly 'pitted anvils' have been found at the Classic Oldowan site of Gombore I, Melka-Kontouré, Ethiopia, ~1.6-1.7 Ma *(GN2002)*.

I would add a third object from site FxJj1, Koobi Fora, ~1.88 Ma. This is a curated, flaked pebble core; the four flakes accidentally generated an inner, nicely symmetrical, rhomboid shape *(HJ1992)*. If indeed symbolic, all three objects seem to belong to a single metaphorical complex.

Finally, at the site of Sterkfontein Cave, South Africa, Stw53 *Homo habilis* remains *(MJ2003; CD2006)* are reported to have stone tool cutmarks, the earliest evidence of 'post-mortem manipulation of hominid carcasses' *(PT2000)*.

Developed Oldowan (~1.2-1.7 Ma). Developed Oldowan stone technology is similar to Classic Oldowan but with a reduced percentage of core-choppers, discoids, polyhedrons and heavy-duty scrapers; more refined light-duty scrapers, denticulates, burins, the first appearance of awls and edge-trimmed flakes. Working of bone tools continues. In later phases of the

Developed Oldowan a few crude bifaces may appear, at least where there is influence of contemporaneous Early Acheulian as in Africa.

The Developed Oldowan is documented in Africa from about 1.7 to about 1.0 Ma. Earliest evidence for the Developed Oldowan industries occurs at its type-site, Olduvai Gorge, Middle Bed II, ~1.5-1.66 Ma *(MR2005)*. At Koobi Fora the Karari industry occurs between 1.55±0.03 and 1.70±0.03 Ma *(IW2000; SN1993)*. From East Africa the Developed Oldowan appears to spread over time to Uganda, Ethiopia, and South Africa.

In southern Asia the Developed Oldowan occurs in the earliest layers of the Li-cycle at Ubeidiya, Israel, ~1.60-1.65 Ma *(BM2006)*.

A continuation of Developed Oldowan dispersal across Southern Asia seems to occur, but the evidence is not as strong as the evidence for Classic Oldowan diffusion. This is due in part to sparseness of sites and the vagueness of classification presented in archaeological reports, which do not clearly differentiate between Oldowan and Developed Oldowan assemblages. For instance Pabbi Hills at 1.2-1.4 Ma would fit a time gradient, but it is not clear if assemblages during this time period are 'Oldowan' or 'Developed Oldowan'. A high percentage of light-duty tools at Xiaochangliang, China, ~1.36 Ma *(ZR2001)* and 'points' at Xihoudu, China, ~1.27 Ma *(ZR2003; WQ2000)* suggest that with a more fine-tuned classification both sites could be classified as Developed Oldowan.

In East Africa the Developed Oldowan is associated with *Homo ergaster/Homo erectus*. There are no hominid fossils in South Asia for this time period, but *Homo erectus* does occur in South East Asia at Perning and Sangiran, Solo River, Java. Perning *erectus* fossils were dated (Ar/Ar) to ~1.8 Ma and Sangiran fossils to ~1.66 Ma *(SC1994; DVJ1994)* but challenged by doubts about Perning (Mojokerto 1) provenience *(HO2006)* and paleomagnetism suggesting ~1.1 Ma *(HM2002, 1993)*. Recent (Ar/Ar) datings at Sangiran suggest *Homo erectus* fossils belong to the timeframe ~1.0 to ~1.5 Ma (LR2001) and Sangiran tools—shell tools, small flake tools—may occur as early as ~1.6 Ma (WH2006; SR2006). These initial reports of Sangiran stone assemblages do not classify them by typology, but what is described appears comparable to the Oldowan or Developed Oldowan of Africa.

If these Asian stone assemblages are comparable to the African Developed Oldowan—and not just very late examples of Classic Oldowan—then there is a case for diffusion of Developed Oldowan technology from East Africa (~1.65 Ma) through Southwest Asia (~1.6 Ma) through Pakistan (~1.4 Ma) and across Southeast Asia (~1.1-1.5 Ma) and into China (~1.3 Ma). However, the opposite hypothesis, that these Asian assemblages are independent, multi-regional innovations building on their indigenous Classic Oldowan roots is not ruled out. Furthermore, if new dating of *Homo erectus* and/or Developed Oldowan in Southeast Asia were to approach 1.6 Ma or even older, then the time gradient evaporates and the hypothesis of a multi-regional convergent evolution of the Developed Oldowan, and even *Homo erectus* would appear more supported.

Given the data reviewed to date, it appears that there might have been a rapid expansion of *Homo erectus* bearing a Developed Oldowan technology out-of-Africa and across all of

southern Asia. Yet if this were so, why, is it the case, as I will show next, that *Homo erectus* does not appear to have carried the Early Acheulian also out-of-Africa, especially if one believes that the Acheulian was a definitive innovation of *Homo erectus*?

As with the Classic Oldowan there is sparse evidence for symbolic behavior during the Developed Oldowan period, but two themes seem to persist. There are a few reports of Developed Oldowan 'pitted anvils': Olduvai Gorge, FLK North Sandy Conglomerate, Middle Bed II, ~1.5-1.66 Ma *(LM1971)*; which, as in the earlier cases from Olduvai FLK North and Melka-Kontouré, is could be a 'cupule' *(BR2003)* or nutcracker *(GN2002)* and which it is remains for science to determine. In addition, two lumps of non-local (manuported) red welded tuff at site BK, Olduvai Gorge, Upper Bed II, ~1.48 Ma, which could have been used for pigment colorants *(HR1976; LL1958; OK1981; BR2003)*.

The earliest sites mentioned above for the three Oldowan periods are summarized in the following table:

EARLY OLDOWAN				
AFRICA	**SOUTHWEST ASIA**	**SOUTH ASIA**	**SE ASIA & SAHUL**	**EAST ASIA**
Ounda Gona, Ethiop.				
~2.5 Ma				
CLASSIC OLDOWAN				
Koobi For a, Kenya	Dmanisi, Gerogia	Pabbi Hills, Pakistan		Majuangou, China
~1.9 Ma	~1.8 Ma	>1.4 Ma		~1.6 Ma
DEVELOPED OLDOWAN				
Karari, Kenya	Ubeidiya, Israel	Pabbi Hills, Pakistan	Sangiran, Java	Xiaochangliang, China
~1.65 Ma	~1.6 Ma	~1.2-1.4 Ma	~1.1-1.5 Ma	~1.36 Ma

Early Acheulian (~1.0-1.7 Ma). The Early Acheulian represents a major new innovation in stone knapping, the production of flake blanks, which are, in turn, used as cores for flaking more useable flakes. Products include crude 'handaxes' with sinuous edges and large flake scars, trihedral picks, rare cleavers. The Early Acheulian has a large component of flakes; chopper, polyhedron, spheroid, heavy-duty scrapers. There is an absence of Levallois or other prepared core reduction techniques.

It occurs in a timeframe overlapping the Developed Oldowan, about 1.7 to about 1.0 Ma. The earliest Early Acheulian sites occur in East Africa, at Olduvai Gorge Middle Bed II, ~1.5-1.66 Ma and Peninj, Tanzania, ~1.4-1.7 Ma. Subsequently it is widespread in Africa from Ethiopia to South Africa and Morocco. At Konso-Gardula, Ethiopia it is associated with *Homo erectus* fossils.

There is an apparent diffusion of Early Acheulian technology from Africa (~1.7 Ma) through Southwest Asia (~1.2-1.6 Ma) to India (~1.0 Ma). On the other hand, to date there appear to be no clearly diagnostic Early Acheulian industries east of India. Sparse sites in this time period in SE Asia, such as Sangiran, and China, such as Gongwangling, Lantian, and

Donggutuo, Nihewan Basin, China have stone assemblages that are not clearly diagnostic and vaguely suggest continuation of Developed Oldowan technology.

Candidates for symbolic behavior in the Early Acheulian are again sparse and of the same kind as in the Developed and Classic Oldowan, possible 'cupule' stones and colorant. At Site 8E, Gadeb, Ethiopia, 0.7 to ~1.5 Ma *(WM1979)*, excavation revealed four well-made ovate obsidian 'handaxes', for which the only known source for that obsidian was ~100 kilometers away; eleven (11) 'rounded cobbles with pits' like those found in earlier Oldowan sites at Olduvai and Melka-Kontouré and hypothesized as either cupules or nutcrackers. In addition there were several pieces of red basalt, which when rubbed yielded red pigment, but there was no direct evidence of their being rubbed *(CJ1979; OK1981)*. I mention the obsidian handaxes, as they suggest that already in the Early Acheulian 'handaxes' may have had a symbolic value.

In the 1940's, considering the then absence of data for Acheulian handaxes in East and Southeast Asia, Hallam Movius postulated that the 'chopper and chopping tool complex' of the Far East reflected its position as culturally backward. This assumed diffusion barrier became known as 'Movius' Line'. If we were to use such terminology, the absence of Early Acheulian technology east of India, if it holds, would best be called a 'Movius Line'. However, there is sufficient archaeology evidence now to show that there is no such line for the Middle Acheulian.

Middle Acheulian (~500 ka to 1 Ma). Middle Acheulian tool technology (~500 ka to ~1 Ma) is characterized by standardization of blank shape and reduction techniques (e.g., Kombewa, Victoria West in Africa); more regularized handaxe shapes (cordiform, amydaloid, lanceolate, oval), cleavers with bits made using a single flat surface scar, trihedral picks, and flake tools (mostly denticulates, notches, scrapers). Some assemblages have only core-choppers and flakes and these may be interpreted as different technological traditions, for example, persistence of Developed Oldowan, or just different 'function' assemblages within the same tradition.

During the Middle Acheulian sites across Southern Asia are more frequent and there is strong substantiation for a diffusion of Middle Acheulian technology out-of-Africa all the way to the Far East.

There is a fairly evident time gradient west to east, from Africa (~1 Ma) through Southwest Asia (~900 ka) through—or around coastal—India (~780 ka), reaching China (~800 ka). Diagnostic Middle Acheulian assemblages have not yet been found in SE Asia, but there are sites in the ~800 ka time range. These core-and-flake assemblages may represent persisting Developed Oldowan or a Middle Acheulian core-and-flake small tool sub-facies. The requirement of watercraft to reach Flores ~800 ka suggests a culture at least as evolved as the Middle Acheulian. Across the 'Southern Route' *Homo erectus* appears to be the innovator of the Middle Acheulian technological wave from Africa to East Asia.

Reports of symbolic behavior appear to take a quantum jump with the Middle Acheulian. Foremost is the quartzite, naturally anthropomorphic figurine, modified with grooves to emphasize 'arms', 'legs', 'head', with traces of red, black, and white paint pigment (iron and manganese). It is the earliest evidence in the world of applied coloring material, and shows workmanship comparable to the Later Acheulian figurine from Berekhat Ram Israel *(BR2001, BR2003)*.

The apparent collection of exotic quartz crystals is reported at four Middle Acheulian sites from the Levant to China:

- Gesher Benot Ya'aqov, Israel, ~750-780 ka *(GN2000)*, where angular quartz crystals occur in the same deposit as two naturally perforated 'bead-like' crinoid fossils natural to site *(GN1991)*
- 16R Dune, Thar Desert, Rajasthan, >390±50 ka *(MS1992, JH2005)* quartz crystal manuports *(PSo2001)*
- Singi Talav, Didwana, Thar Desert, Rajasthan, >390 ka *(CP2004)*; 6 quartz crystals, no use-wear, too small for tool manufacture, non-local *(BR2003, BR1993; JH2005)*
- Zhoukoudian Cave, China Locality 1, Layers 5-10, 600-800 ka *(BN2004)*, Upper 8,Quartz Horizon 2: ~20 quartz crystals, 1 perfect fully faceted, probably from 7 kilometers away and spheroids *(BL1985; BR1991)*.

While the use of red pigment is a hypothesis for several Developed Oldowan and Early Acheulian sites noted earlier, the case is convincing at the Middle Acheulian site of Hunsgi II/V, Hunsgi Valley, Karnataka, India, >350 ka for related sites in Valley *(NN2003)*, with its report of both ochre nodules and hematite with wear facets and striations, evidence for 'pigment crayons' *(BR1990; BR1993; BR1994)*.

Finally, following on earlier sites with 'pitted anvils', Gesher Benot Ya'aqov has yielded 46 pitted cores, blocks and slabs, which, in the light of the extensive record for the collection of edible nuts, including varieties that would require hammer and anvil to crack open their shells, are presumed to have been used for cracking nuts *(GN2002)* although their appears as yet no convincing science to disprove the hypothesis that they actually are 'cupules', a form of symbolic behavior.

I leave aside for now the voluminous debate over whether or not some bifaces may have been employed in symbolic behavior. I have written elsewhere (posted on OriginsNet.org) a hypothesis for how, during the Middle Acheulian, complementary biface shapes, such as 'handaxe' and 'cleaver', could have been used to symbolize the deepest spiritual notions of complementarity, tension of opposites, birth and death, and so on.

Later Acheulian ('Upper Acheulian') (~200-650 ka). Later Acheulian tool technology is characterized by bifaces that are more symmetrical and refined than in the Middle Acheulian, with well-made, sometimes beautiful, cordiform, amygdaloid, and ovate handaxes. In some assemblages ovates dominate. There is greater use of soft hammer; increase use of Levallois technique, but some sites no Levallois; disappearance of core-choppers; and often the length of handaxes decreases. Denticulates, notches, and scrapers continue. In Africa late sites, contemporaneous with Final Acheulian, may have stone assemblages that contain a few blades. In China there are apparently points at some sites in this period, and if so, these predate African points, which do not seem to occur until the Final Acheulian.

Evidence for Later Acheulian assemblages seems to appear first in Africa at Bodo, Ethiopia, dated by multiple methods to between 0.55±0.03 Ma and 0.64±0.03 Ma, and at the

same site occurs fossils of *Homo rhodesiensis* (or *Homo heidelbergensis*) *(CJ1994)*. Later Acheulian appears in Southwestern Asia first at Berekhat Ram, Israel, which has an Ar/Ar integrated age of 470±8 ka *(FG1983)* and is considered the earliest evidence of Levallois prepared core reduction in the Levant *(BO1994, BO1998)*. Later Acheulian sites in India dated by U-series are beyond the limits of that technique. It seems first evident in Karnataka at sites in the Hunsgi-Baichbal Valley, such as Sadab, 290 ka, and Teggihalli, 287 ka and >350 ka *(MS1992)*. In this time period, the few sites discovered in Southeast Asia, in Myanmar, Vietnam and the Philippines, seem to evidence only continuation of Developed Oldowan core-and-flake industries. However, in East Asia something like a Later Acheulian, appears at Zhoukoudian Locality 1 Layers 2-4, ~400-500 ka, with cleavers, flakes and points and evidence of the use of cooking fire *(SG2001; BN2004; LJ1998; BL1986)*; and Kommonmoru, North Korea, 400-600 ka, which has picks and handaxes *(BK1992)* may also be considered Later Acheulian.

Later Acheulian period hominin fossils from Africa (Bodo; Olduvai Gorge; Kapthurin; Ndutu; Elandsfontein; Cave of Hearths; Hoedjiespunt; Salé; Sidi Abderrahmen; Wadi Dagadlé), to India (Hathnora), to South East Asia (Tham Khuyen Cave) to China (Nanjing; Yunxian; Chenjiayao; Zhoukoudian 2-4; Longtandong) are apparently all about equally evolved though assigned a variety of species designations—*Homo heidelbergensis* or *Homo rhodesiensis* or 'evolved' *Homo erectus.*

If these dates and tool classifications hold, then there appears to be a slight time gradient for the diffusion of Later Acheulian from Africa (~500-600 ka) through Southwestern Asia (~470 ka) to western coast of India (~300 ka) apparently reaching China and Korea (~400-500 ka). The gradient is not strong and one might count sites such as Zhoukoudian 2-4 as a convergent innovation building on indigenous Middle Acheulian. Further, one might consider Zhoukoudian 2-4 more advanced than sites in Africa, at least in evidencing points prior to their appearance in Africa, which did not occur until the Final Acheulian.

The Narmada Crossing. Evidence suggests that there was a well-established late Later Acheulian South Asian transcontinental Narmada Crossing, from Gujarat (Umrethi, ~190 ka; Kaldevanhalli-I, Karnataka, ~170 ka), following the Narmada River through Madhya Pradesh (sites such as Bhimbetka; Daraki-Chattan; Hathnora *heidelbergensis* site, ~200-300 ka; Maihar) towards its source, and crossing overland to rivers such as the Chambal, Betwa and Son (many sites around ~200 ka) down to the Ganges and thence eastward, or, the reverse. There may have been a movement of people and trade in both directions. Better dating of sites is needed to confirm one or the other hypothesis. In either case, whether diffusion or exchange, the major rock art site of Bhimbetka is positioned right at the center of the Narmada Crossing.

As was the case for the Middle Acheulian period, there are a sparse number of excavated sites in Southeast Asia, so it is not really possible to type the industry mode. For example, Upper Irrawaddy appears to evidence a persistence of Developed Oldowan type industries. However, given East Asian sites that may be characterized as Later Acheulian, one need not posit a 'Movius Line' for the Later Acheulian in Southeast Asia. Again, these may be functional facies and we can anticipate Later Acheulian industries yet to be discovered.

With respect to symbolic behavior, the Later Acheulian seems to evidence another quantum leap in frequency and sophistication. Most remarkable is the now well-known Berekhat

Ram stone 'female' figurine, the natural anthropomorphic shape of which was enhanced with artificial grooves *(GN1986, GN1995; MA1996, MA1997, DF2000)*. At the site of Erfoud, eastern Morocco, a manuport cuttlefish fossil, naturally shaped, with no evidence of working, has the 'life-size shape of a penis' was found in association with Later Acheulian bifaces (Fiedler, 1984) *(BR2002)*.

At Wonderwerk Cave, South Africa, in Later Acheulian assemblages dated by U-series to ~350 ka, 2 ironstone slabs bear engraved sub-parallel lines; there are abundant ochre fragments at every level; and exotic quartz crystals, small 'pretty' colored river pebbles *(BJ1992; BR2003; BR1993)*. Here we see continuation of the Middle Acheulian tradition of collecting quartz crystals and other exotic stones and red ochre for pigment. Wonderwork Cave itself is a site of extensive ochre mining from Acheulian to recent times.

These earliest known African petroglyph engravings may be compared to an emergent Later Acheulian petroglyph tradition in India evident at the UNESCO World Heritage site of Bhimbetka, near the Narmada River, Raisen District, Madhya Pradesh. In Auditorium Cave at the lower Later Acheulian level of Wakankar Trench II, site III F-24, a boulder is engraved with one cupule and one undulating groove, which just touches it. The Later Acheulian levels underlie a Final Acheulian layer, which recently obtained a preliminary OSL dating 106±20 ka; the Acheulian Levels will be much older than that date *(BR2005)*. Nearby Chief's Rock, which stands at the crossing of two perpendicular corridors, is engraved with nine (9) cupules and bears marks of red pigment *(BR2005, KG1996)*. Microerosion technique applied to these cupules indicates that their age is well in excess of 100 ka and they were likely made during the Later Acheulian *(BR2005)*.

A Later Acheulian cupule-making tradition also seems to occur at Daraki-Chattan Cave, Madhya Pradesh, where Acheulian levels revealed exfoliated slabs bearing cupules and the hammerstones used for their engraving and also one hematite nodule; the cave walls are covered with more than 500 cupules and 2 engraved grooves *(BR2005, KG1996)*.

The Bhimbetka Wakankar Trench Acheulian also yielded a flaked chalcedony stone disc. It is similar to a stone disc found in the Acheulian level at the site of Maihar, Satna, Madhya Pradesh *(BR1992; BR1993)*. Compare the site of El Greifa E, Fezzan, Libya, U-series date ~ 200 ka, with Late Acheulian and three (3) fragments of ostrich eggshell disc beads *(BR1997)*. [Note: based on its late date, this site might be considered Final Acheulian.]

Finally, cutmarks on the Bodo *rhodesiensis* skull appear to indicate 'intentional postmortem defleshing' *(WT1986)* and we may hypothesize some sort of Later Acheulian mortuary ritual. Perhaps this continues or builds on a practice on-going since the Classic Oldowan period, recalling cutmarks on *Homo habilis* remains at Sterkfontein Cave, South Africa, noted earlier.

Final Acheulian (~150 to 300 ka). Just as the Developed Oldowan was contemporaneous with the Early Acheulian innovation, so the Final Acheulian is contemporaneous with the Middle Paleolithic/Middle Stone Age. Final Acheulian tool technology is characterized by multiple reduction strategies, Acheulian bifaces, sometimes made on Levallois flakes, Levallois and disc

cores; variable presence of handaxes, cleavers as well as points and blades. In Africa it has been called 'Final Acheulian' or 'Intermediate' with regional variants, including the Kapthurin, Sangoan and Fauresmith and in the Levant the Mugharan Tradition, and similarly in India.

Early African sites are GnJh15 at Kapthurin Formation, Kenya, around >284±12 ka *(TC2006; MS2005; DA2002; MS2000)*; Garba III, Melka-Kontouré, Ethiopia, ~250 ka, with Final Acheulian and remains of 'earliest' *archaic Homo sapiens (MJ2001)*; and at Bir Tarfawi and Bir Sahara East, southwestern Egypt, ~250-320 ka (OIS9) *(SB1995)*. The Final Acheulian appears in the Levant at Tabun Cave, Mt. Carmel, Israel, Layer E, Level XIII, Yabrudian (TL mean) 302±27 ka, and Level XI, Acheulo-Yabrudian and Amudian (TL mean) 264±28 ka, with even earlier ESR dates *(MN2003, 1995,1994, BO199, VH1998)*. Final Acheulian is reported from India at sites in Maharashtra, Bori, Kukdi River, Nevasa, Pravara Basin and Yedurwadi, Krishna Basin, each dated U-series ~200 ka *(BR200*as well as Bhimbetka, Madhya Pradesh, where the Final Acheulian 'Intermediate' Layer, with 'Eastern Micoquian-like' bifaces now has a preliminary OSL date, 106±20K *(BR2005)*.

Based on its dates I have allocated the remarkable report of Acheulian artifacts at Luonan Basin, China to this Final Acheulian time period. The report describes 50 open-air sites with handaxes, cleavers, and trihedral picks as well as flake tools including 'points' *(WS1998)*, (TL) 182.8±9.1 ka to 251.05±12.5 ka (*WS2005*). The open-air sites appear to continue typical Later Acheulian found at nearby Longyadong Cave, but with more points, but at this time period the cave has only the small tools and no bifaces. Wang observes that 'this dichotomy is not explained by any current theory of hominid behavior' *(WS1998, WS2006)*. Perhaps it is that the bifaces occur especially at habitation/work sites, while caves may have a different purpose, perhaps for ritual, initiation, deposition of the dead, and so on. (As an aside, I wonder to what extent our knowledge of Southeast Asian and East Asian Paleolithic sites is skewed due to a bias toward cave sites and how much this has contributed to the illusion of the 'Movius Line'.)

Across regions there does not appear to be a strong time gradient for the Final Acheulian. Dates for Levantine Southwest Asia (~300 ka or earlier) are actually older than dates in Africa (~285 ka). On the one hand, one might infer a diffusion of Final Acheulian type industries from—if we strictly adhere to the evidence—the Levant spreading to Africa and also to India, Gujarat and Maharashtra (~200 ka) and into the Narmada valley (at least by ~100 ka) and to China (~250 ka). Within limits of the database there is no evidence for Final Acheulian sites in Southeast Asia, although Thailand does show an *archaic Homo sapiens* (~130-170 ka). On the other hand, one might infer convergent innovation building on Later Acheulian across regions. Either way, we cannot posit a 'Movius Line' for this time period.

Within the limits of this review, earliest reported Early, Middle, Late and Final Acheulian sites are summarized in the following table.

EARLY ACHEULIAN				
Olduvai, Tanzania	Ubeidiya, Israel	Isampur, India		
~1.5-1.7 Ma	~1.2-1.6 Ma	~1.0 Ma		
MIDDLE ACHEULIAN				
Olorgesailie, Kenya	Bizat Ruhama, Israel	Attirampakkam, India		Bose, China
~990 ka	~850-900 ka	~780 ka		~803 ka
LATE ACHEULIAN				
Bodo, Ethiopia	Berekhat Ram, Israel	Sadab, Hunsgi, India		Zhoukoudian, China
~550-640 ka	~470 ka	~290 ka		~400-500 ka
(Well-established Narmada Crossing by ~200 ka)				
FINAL ACHEULIAN				
Kapthurin, Kenya	Tabun, E, Israel	Bori, India		Luonan, China
~>285 ka	~300 ka	~200 ka		~250 ka

With respect to symbolic behavior, the Final Acheulian, at least in Africa, seems to continue Later Acheulian 'ochre' and 'cupule' themes:

- GnJh15, Kapthurin, Kenya, around >284±12 ka, 74 pieces red ochre (totaling more than 5 kg) pulverized and chunks and grindstones *(TC2006; MS2005; DA2002; MS2000)*
- Blind River Mouth, South Africa, Fauresmith, large grindstone incised with checkerboard crisscross lines *(LP1933)*
- Sai Island, Nile River, northern Sudan, Site 8-B-11, Sangoan, (OSL) L5 and L6, between 182±20 ka and 223±19 ka, Level 6, dense concentration of red and yellow ochre lumps, some with ground surfaces; sandstone slab, top pecked flat, grinding hollow with 7 cupules; several chert pebbles with red/yellow ochre adhering, one with black inclusions, 'symbolic'; Level 5: stone circle with 2 more slabs with depressions *(VPP2003)*

as well as continuing mortuary ritual, earlier noted from Later Acheulian (Bodo) and Classic Oldowan (Sterkfontein):

- Herto, Upper Herto Member, Ethiopia, (Ar/Ar on underlying and overlying tuffs) 154±7 to 160±2 ka, *Homo sapiens idaltu* between Bodo, Kabwe *rhodesiensis* and *Homo sapiens sapiens (WT2003)* [that is, *archaic Homo sapiens*]; all three individuals bear defleshing cutmarks and scrape marks, the juvenile polishing (not processing for food), which is 'indicative of mortuary practice' *(CJ2003)*

While the database does not show comparable symbolic behavior evidence outside of Africa, it is highly likely that sooner or later such will be identified.

Early Middle Paleolithic (Early Middle Stone Age) (~150 to 300 ka). Just as the Early Acheulian innovation was contemporaneous with the Developed Oldowan, so the Middle Paleolithic (Middle Stone Age) is contemporaneous with the Final Acheulian.

First appearing in Africa and Southwestern Asia, Early Middle Paleolithic/Middle Stone Age tool technology is characterized by elongated or large, relatively thick, blades and point blanks flaked from radial, single or opposed platform cores, recurrent and some Levallois, with minimal preparation of striking platform; retouched points—many elongated, prismatic blades, endscrapers and burins common; no backed microliths; evidence of hafting points and blades (tangs, grooves, mastic); intra-regional point styles suggesting diverse cultural traditions; and use of color pigments, which becomes extensive by Mid-MSA/MP. This technological innovation is associated with *archaic Homo sapiens*, such as *Homo helmei* in Africa.

Middle Stone Age industries appear to originate in East Africa or South Africa around 280 ka and perhaps earlier. Although reports reviewed do not indicate precise dating, EMSA is first reported in Africa at Olorgesailie, Kenya Locality B and G, Olkesiteti Formation, in strata dating between ~220 to 340 ka *(BA 2005)*. It occurs at Florisbad, South Africa, where fossil *Homo helmei* dates (ESR) 259±35 ka in levels with Early MSA tools, OSL dated to 281±73; 279±47 ka *(GR1996, RR1997, KK1999)*; Twin Rivers Kopje, Zambia with Lupemban industry, (U-series) A-block, ~265 ka and F-block, 140-200 ka *(BLP2002)*; Koimilot, Kapthurin Formation, Kenya (Ar/Ar) ~200-250 ka *(TC2006)*; and Taramsa 1, Upper Egypt, (OSL) ~210 ka *(VVP1998)*. It seems to first occur in the Levant at the Levantine Middle Paleolithic type site for 'Tabun D Mousterian' industries, Tabun Cave, Israel, Layer D, (TL) 256±26 ka *(MN2003)* although (ESR LU) 203±26 ka *(GR2000)*. Middle Paleolithic sites occur in South Asia later at around 150 ka, first at 16R Dune, Didwana, Thar Desert, Rajasthan, (Th/U) 150±10 ka and 144±12 ka (MS1992, JH2005) and is well established at hundreds of sites in the Kaladgi Basin, Karnataka during the period 100 ka to 50 ka *(PM2003)*. Middle Paleolithic is reported in South East Asia by around 130 ka.

Although *archaic Homo sapiens* appears in China at Dali, (Useries) 209±23 ka, and perhaps earlier at Zhoukoudian New Cave, perhaps as early as 270 ka, and innovation of radial core multiple reduction strategies occurs at Zhoukoudian by at least around 120 ka, apparently such methods were not used to produce points or blades, though points are noted for China at much earlier periods. This may reflect limits of my review or the status of research.

Thus, there does appear to be an Early Middle Paleolithic time gradient from Africa (~280-300 ka) through Southwest Asia (~260 ka) that spreads to India (~150 ka) and Southeast Asia (~130 ka). The China discrepancy is interesting in the light of genetic theories suggesting an early Homo clade disperses from Africa across Southern Asia but does not reach China. But future archaeology might show that Early MP technologies do indeed reach China.

With respect to symbolic behavior during the Early MP/MSA, there are reports of use of ochre, specularite and other pigment colorants.

- Twin Rivers, Zambia, (U-series) A-block, ~265 ka and F-block, 140-200 ka *(BLP2002)*. At Lupemban levels in A and F-blocks 306 specularite, hematite, limonite, manganese dioxide pieces, some with evident striations for powder; brown, red, yellow, pink, purple, blue-black pigments; huge quantity and a pestle stone with hematite stain on working surface suggests some sort of ritual or symbolic use *(BLpig2002; CJ2001)*
- Hayonim Cave, Israel, Lower E (TL) ~200 ka *(VH1998)*, Tabun D, several flints retained red ochre on retouched edge (BO1995, 1997)
- Border Cave, South Africa, Strata 4-6 'MSA1' or 'Early MSA', (TL) ~165-180 ka (ESR) ~80-227 ka (OIS5-6), ochre pieces all levels; ostrich eggshell beads *(BP1978; WI1999)*.

In addition, I located one report of an incised wooden object.

- Florisbad, South Africa, Peat I unit, (OSL) 281±73; 279±47 ka *(GR1996, RR1997, KK1999)*, curved wooden implement with longitudinal parallel incisions ('cutmarks') on one end *(BM2003; BRe2003; BR1992)*.

Mid-Middle Paleolithic (Mid-Middle Stone Age) (~60 to 150 ka). This is the key time period for *Homo sapiens sapiens* out-of-Africa hypotheses. The Mid-MSA/MP technological mode appears in Africa around 150 ka and fades into the Late-Middle Paleolithic (Late MSA), which, in Africa, marks the emergence of the Later Stone Age (Upper Paleolithic) technology mode around 60 ka. I acknowledge this 60 ka lower boundary for the Mid-MSA as somewhat arbitrary; it is for purposes of simplification but also perhaps—at least from the limited perspective of my review—more fitting than, for instance, a 50 ka boundary as some would argue. In palaeoclimate terms, Mid-MSA assemblages appear to correlate pretty much with Oxygen Isotope Stage (OIS) 4 (~59-74 ka) and OIS 5 (~74-130 ka).

In discussing out-of-Africa theory some argue that dispersion occurred because of the extreme aridity of an African dry spell that occurred 60-20 ka, with populations heading out to escape the stress of this arid phase. I believe the data suggests just the opposite: a wave of *Homo sapiens sapiens* dispersed during the wet phase that preceded the arid phase. This inference seems to me much more plausible than an arid phase dispersal, for then there would be insufficient water, game animals or plant foods for survival on top of the stress of dispersal into new landscapes and biozones. During the arid phase in North Africa post 60-ka it is seems more the actual case that people headed for the nearest waterine landscape and hunkered down for the long haul; sites decline inland and increase around ocean, rivers, or south toward a more vegetated central Africa.

Furthermore, *sapiens sapiens* reached Australia by ~55 ka and carrying an Early MP or 'regional variant' Mid-MP industry. A Late-MP or UP dispersal hypothesis does not match the requisite time of Australian arrival nor the technological level of the earliest Australian sites.

Mid-Middle Paleolithic (Mid-Middle Stone Age) tool technology is characterized in African and Southwest Asia, and we might say, across the 'Southern Route' by the continuation of Early MP/MSA production of blanks by multiple reduction methods (single, double, multiple

platforms, radial disc cores, Kombewa), sometimes ovoid and large flakes, regional variants of specialized prepared core techniques (e.g., Levallois, Nubian) and specialized point, blade or scraper styles (e.g., African Nazlet Khater, Aterian, Pre-Aurignacian, North African Mousterian, Ethiopian MSA, Kenya Rift MSA, Mumba Industry, Final Lupemban, Katanda MSA, Bambatan, Pietersburg, MSA-IV, Howiesons Poort, Stillbay; Levantine Nahr Ibrahim, Denticulate or 'Typical' Mousterian, Mousterian of Acheulian Tradition, Tabun C and so on. As noted these Mid-MSA/MP industries appear exclusively associated with a modern (or 'early modern') *Homo sapiens,* i.e., *Homo sapiens sapiens* and, if the designation holds, *Homo floresiensis.*

Mid-MSA stone tool technology seems first to occur in Africa at Mumba Shelter, Tanzania, Levels VIA and VIB and there it is associated with *Homo sapiens sapiens* (~130 ka) *(MM1987; MS2000).* The earliest well-dated 'anatomically modern human' is earlier, Omo Kibish, Ethiopia (~195 ka), but associated tools are not diagnostic *(MI2005).* Subsequent key sites are Buri Peninsula on the Red Sea Coast, Eritrea (~125 ka), with an 'Early MSA' associated with bifaces *(WR2000)*, suggesting a kind of Mousterian of Acheulian Tradition. There are a number of 'Early Nubian' industry sites around this time, such as Bir Tarfawi and Bir Sahara, Egypt (~100 to ~125 ka) (VPP1998; SB1995; MN1999), Taramsa I, Upper Egypt (~120 ka) *(VVP 1998)*; and Sai Island, Nile, Sudan (OIS5) *(VPP2003).* 'Mousterian K' ('Denticulate or Typical Mousterian') occurs at Nazlet Khater, Lower Nile, Egypt (~110 ka) *(VPP1998)* and an intriguing 'Aduma industry' with micro-Levallois and micro-Aduma reduction occurs at sites in the Aduma area, Middle Awash, Ethiopia (~80-100 ka) *(YJ2005).* Mid-MSA stone assemblages appear in a similar time frame further south in Africa, for instance at Mumbwa Caves, Zambia (OIS5e) *(BLP2002; BL1995)*; Klasies River Mouth, South Africa, 'MSA I and MSA II', (~100-128 ka) *(GR2005; ES2005; SR1982; DH1989, 2001)*; Florisbad, South Africa (~121 ka) *(GR1996, RR1997, KK1999)*; Blombos Cave, South Africa (~100 ka or more) *(JZ2006; TC2006)*; and continues on at a large number of sites across Africa until around 60 ka.

A Mid-MP regional variant occurs in the Levant, the Tabun C industry. The re-dating of the C level at Tabun Cave, the type site, formerly though to be OIS5, puts the lowest level at the extreme of ~250 ka, although a distillation of the diverse datings suggests something more like between ~130 to <200 ka *(MN2003; GR2000).* This might make Tabun C older than any Mid-MP in Africa and suggests either (a) an origin for the Mid-MSA in the Levant; (b) given the Omo Kibish date, perhaps an absence of discoveries of Mid-MSA in Africa prior to Mumba Shelter; (c) co-innovation of Mid-MP in Africa and the Levant; and/or (d) the possibility that the Tabun C datings are all too high and the date should be closer to the low end of the dating, i.e., back to OIS5e, which still does not rule out co-evolution of Mid-MP in Africa and the Levant.

Tabun C occurs at Hayonim Cave, Israel, around ~150 ka *(VH1998).* (Perhaps this is closer to the true dates for Tabun Cave C.) *Homo sapiens sapiens* in combination with Tabun C industries occurs at Skhul (~100-130 ka) *(GR2005; MN1994, MN1995, VH1998)* and Qafzeh (~85-100 ka) *(MN1994, MN1995, VH1998).* Mousterian of Acheulian Tradition occurs at Har Karkom, Negev *(AE2006)* and Wadi Arah, Bir Khasfa, southern Oman *(RJI2004b)* although these assemblages are not securely dated. Another Mid-MP regional variant occurring in the Levant is the Aterian, at Bani Khatmah, Rub' al-Khali, Saudi Arabia *(PM2004; BA2006)* and at Har Karkom, Negev *(AE2006).* If there was an out-of-Africa passage along the coast of the Red

Sea and around Oman there was also one right out of Egypt through the Negev into the Levant and east. Arguments for an either/or are apparently not based on the evidence.

While Early-MP seems first reported in India ~150 ka and persists to ~75/100 ka, the Mid-MP occurs (does it 'arrive'?) in India ~75 ka, persisting to around 50 ka or later. Perhaps the industry type could be said to first occur at Patpara, Middle Son Valley, with its blade, flake blade, and scraper industry *(JH2005)*. It occurs at Samnapur, Narmada Valley, Madhya Pradesh, ~74±2 ka *(JH2005)* and Baghor Formation, Son Valley, also ~74±2 ka *(RB2005)*. It is at Jetpur, Hiran Valley, Saurashtra, Gujarat as late as ~60 ka *(JH2005)*. Given these reports, it appears that we have another case of a Narmada Crossing of India, parallel—though the database is sparse—to earlier evident Narmada Crossings of the Later Acheulian and the Final Acheulian.

Next we arrive at the stunning site of Liang Bua Cave, Flores, ~74 ka, with other loci at dated 74-95 ka and multi-method reduction, Kombewa flakes, points and blades, flakes reduced to cores, *façonnage*, and the mini-*Homo floresiensis (MM2007, MM2004)*. With its particular stone assemblage and modern *Homo sapiens*, Liang Bua appears to be very 'Mid-MP'.

Curiously, the subsequent entry of *Homo sapiens sapiens* into Australia is associated with a 'Core-and-Scraper Tradition', which would seem at first best classed as an Early MP industry. (I purposely do not refer to it as the so-called 'Australian Core Tool and Scraper Tradition' as new studies indicate that the 'horsehoof' cores are not tools but edge damaged bipolar cores.) However, given the stereotypical nature of these stone assemblages across multiple sites in this time period, the more it appears that this 'core-and-scraper' tradition might be better typed as a Southeast Asian-Australian 'regional variant' of the Mid-MP, one without blades or points.

The earliest best-dated site for Australia is Malakunanja II, Kakadu, Australia, ~52 ka *(RR1990; OJ2004)* with Core-and-Scraper Tradition tools *(RR1990; FJ1990)*. The neighboring site of Nauwalabila I, with a similar industry, has dates ~53 and ~60 ka, but these dates are questioned (*RR1990; BM2000; OJ2004)*. At Lake Mungo, Australia, ~43-45 ka *(BJ2003; GR2006)* at least two burials of *Homo sapiens sapiens* occur associated with Core-and-Scraper Tradition tools *(BJ1970; MJ1999)*; LM1, a female, with evidence of cremation, hearths, faunal bones suggesting possible funeral feast, and LM3, male, with ochre burial *(MJ1999, FJ1990; BJ1970)*.

The Lake Mungo 'burials' are not that much different from Mid-MP 'burials' at Qafzeh, Skhul, and Border Cave ('burial', ochre, 'grave goods', perforated and un-perforated non-local shells, engraved stone). This lends credence to the notion that the Southeast Asian-Australian 'Core-and-Scraper Tradition' is a regional variant of a general Mid-MP cultural tradition.

Around the same time as the Mungo burials with Core-and-Scraper Tradition, another Mid-MP regional variant seems to occur at Devil's Lair, Australia, ~41-46 ka *(OJ2004)*. The Devil's Lair assemblage contains flakes, small tools, possibly adzes for hafting, split pointed bones, bone points, and resin on stone tools *(FJ1990)*. Thus, even though they do not appear to contain stone blades or stone points, these Australian sites attest to the presence of two Mid-MP regional variants in Australia during this time.

A third Sahul 'regional variant' of the Mid-MP has stone assemblages characterized by grooved and ungrooved 'waisted axes'. The first reported occurrence is Huon Peninsula, Papua New Guinea, ~47 ka or between ~44 and ~61 ka dated tephras *(GL1986, OJ2004)*.

East Asia reports *Homo sapiens sapiens* at Bailiandong Cave, China, ~160 ka *(SG2002)*; Tongtianyan Cave, Guangxi, south China (the 'Liujiang hominid'), ~111-139 ka *(SG2002)*; and Huanglong Cave, Yunxi, Hubei, China, ~103 ka, and in this latter case associated with an Early MP industry (scraper-based, no points or blades)*(WX2006)*, but again, like the Southeast Asia-Australia case, with a more refined analysis and more sites, this industry might be seen to be a Mid-MP regional variant.

Given these 'earliest' dates by region, there does appear to be a time gradient across regions West to East, with the caveat that Africa and Southwest Asia may have similar dating. There appears to be a wave (or waves) possibly originating in Africa (~195 Omo Kibish or ~130 Mumba Shelter) or Southwest Asia (~150-160 ka) especially if early Tabun Cave C ESR dates (~130-200 ka) are accepted. Mid-MP subsequently occurs in India (~100 ka), subsequently in Southeast Asia (Flores ~75 ka) and Australia ~55 ka. *Homo sapiens sapiens* appears in China (~150 ka) but apparently, given sparse evidence or limits of my review, using either an Early-MP or Mid-MP mode of stone technology; more finds are needed to rule out one or the other. *Homo sapiens sapiens* seems to occur in China (~150 ka) but apparently continues using an Early MP stone technology during the Mid-MP time period.

With respect to expressions of symbolic behavior (palaeoart), Mid-MP sites from Africa to Australia evidence a major intensification compared to prior Early-MP and earlier eras.

Previously thought to be an innovation of Upper Paleolithic/Later Stone Age, Mid-MP cultures provide the first clear evidence for the mortuary practice of 'burial' or, at least, deposition with ritual objects, such as ochre, animal bones, perforated shell beads and un-perforated non-local shells, and engraved stones.

- Skhul, Israel, ~100-130 ka *(GR2005, MN1994, MN1995, VH1998)*, (ESR U-series) ~100 to 130 ka, Tabun C, 4 'burials' *(BA1992)*, *Homo sapiens sapiens* with some archaic features; S5 burial with wild boar mandible; marine shells not related to food acquisition *(BO1995)*, two shells are beads *(VM2006)*;
- Qafzeh, Israel, ~85-100 ka *(MN1994, MN1995, VH1998)*, 18 MNI *Homo sapiens sapiens*; Tabun C, 3-7 burials, 1 with large fallow deer antler over hands over upper chest, *(BO1993; BA1992)*; or not burials, rockfall *(GR1999)*; extensive ochre at every level (see section on ochre below) and near Q8 'burial' engraved stone plaquette (see section on engraving below);
- Klasies River Mouth, South Africa, (U-series, OSL, geostratig.) 'MSA I' OIS 5 ~115-128 ka, 'MSA II' 101±12 ka (*GR2005; ES2005; SR1982; DII1989, 2001)*, MSA I, II, III *Homo sapiens sapiens (SR1982);* show cut and percussion marks and burning, 'indicates cannibalism' *(WT1987; DH2001)*, which does not exclude it being a mortuary ritual;
- Border Cave, South Africa, Stratum 3 (AAR) bracketed >56 <100 ka and (ESR) dates in between, 58±2 to 76±4 ka (*GR2001*; *MG1999)*, 'MSA2' = Howiesons

Poort, BC3 infant skeleton, stained by red ochre, with perforated *Conus* shell in 'shallow grave'; higher level, *Conus* manuported 80 km *(GR2001; MS2000)*; Lake Mungo, Australia, ~43-45 ka *(BJ2003; GR2006)*, core-and-scraper tradition tools, at least two burials of *Homo sapiens sapiens (BJ1970; MJ1999);* LM1, a female, with evidence of cremation, hearths, burnt animal bones and fish bones, emu eggshell fragments, mussel shells, suggesting grave goods and/or funeral feast, and LM3, male, burial with ochre *(MJ1999, FJ1990; BJ1970).*

To which might be added this ritual for a game animal:

- Nahr Ibrahim (Asfurieh) Cave, Lebanon, ~80-92 ka, Tabun C and Tabun B *(TI2000)* —exact industry/stratum needs confirmation—fallow deer 'burial' with red ochre; bones gathered in pile, some still articulated, unbroken, and skull cap placed on top, in association with flints, unusually large number just above the skeleton, pieces of magnetic red ochre scattered in it *(SR1982, MA1990).*

Evidence for pigment use is widely reported. In addition to mortuary sites just noted, I cite only the following to show something of the chronological, geographic and quantitative extent:

- Florisbad, South Africa Unit F: (ESR) 121±6 (OSL) 138±31 ka *(GR1996, RR1997, KK1999),* large ochre grinding slabs *(MS2000)*;
- Mumbwa Caves, central Zambia, Basal MSA, OIS5e *(BLP2002; BL1995)*; 1 kg+ blocks of non-local hematite showing grinding or scraping *(BR2003)*;
- Qafzeh, Israel, ~85-100 ka—(see more details above under section on mortuary practices) —min. 84 ochre pieces at every level, 6 worked, specific hues selected and manuported 40 km, percentage associated with burial loci and levels *(HE2003)*; red ochre on working edges of some tools, 4 naturally perforated *Glycymeris* marine shells *(BO1993, BO1995, VM2006)*;
- Klasies River Mouth, South Africa, 'MSAI' ~115-128 ka and 'MSA II' 101±12 ka, MSAII-a and II-b, 180 red ochre pieces, >50% with wear facets, incisions to remove powder, 14 from MSAI; Cave 5:1 hematized shale 'crayon' *(SR1982, DH2001; WI1999)*;
- Porc Epic Cave, Dire Dawa, Ethiopia, occupied 61 to 77.5 ka, 'Late MSA' *(CJ1984),* mandibular fragment *H. helmei (MS2000)*, 298 fragments of ochre, at least 40 with clear wear facets from grinding *(CJ1984; CJ1988; MS2000; BR1992)*;
- Blombos Cave, South Africa, M1 and M2 (~OIS5a 75-85 ka), M3 (~OIS5c 95-105 ka): 8000 pieces of ochre, most worked by scraping and grinding, all three levels; M3, most utilized ochre of all levels *(HC1997, HC2001, HC2002; DF2001, DF2005; SM2004; HC2004)* dating *(JZ2006; TC2006)*;
- Apollo 11 Cave, Namibia, Level G, (AAR) ≥83 ka *(MG1999)*, Stillbay, pigment *(WW 1974; WW1976)*;
- Ochre, specularite and other pigment pieces and powder, pigment stained grindstones, other evidence of pigment use is reported for these additional African Mid-MP sites (see Synoptic for details):

- Klasies River Mouth, South Africa, 'MSAI' ~115-128 ka and 'MSA II' 101±12 ka, 1 bone fragment with 4 thin parallel grooves, 2 bone fragments with serrated edges *(SR1982)*;
- Blombos Cave, South Africa, M1 and M2 (~OIS5a 75-85 ka), M2: 21 worked bone tools; some bone tools with evenly spaced incisions; MI: Stillbay, 10+ bone tools; (see 'language' section below for additional incised ochre pieces) *(HC1997, HC2001, HC2002; DF2001, DF2005; SM2004; HC2004)*;
- Incised, serrated, or notched ochre pieces occur at African sites, such as Klasies River Mouth, South Africa; Hollow Rock Shelter, South Africa; Howiesons Poort, South Africa – H.P Level (see under 'language' section below);
- Apollo 11 Cave, Namibia, Level G (AAR) ≥83 ka *(MG1999)*, Stillbay, 2 notched bone fragments *(WW 1974, WW1976)*;
- Apollo 11 Cave, Namibia, Level F (AAR) 63±6 and 69±7, Howiesons Poort, 3 ostrich eggshell fragments with incised crisscross lines; 2 notched bones *(WW 1974, WW1976)*;
- Diepkloof Shelter, South Africa, H.P. Level, 71±8 ka *(VH2005)*; 2 ostrich eggshell fragments engraved with subparallel lines *(MS2000)*.

Collection/manuporting of exotic objects (crystals, fossils, shells, non-local stone with 'aesthetic qualities'):

- Qafzeh, Israel, ~85-100 ka, 4 naturally perforated *Glycymeris* marine shells *(BO1993, 1995, VM2006)*;
- Border Cave, South Africa, bracketed >56 <100 ka (details above), 'MSA2' = Howiesons Poort, *Conus* shell, manuported 80 km *(GR2001; MS2000)*;
- Other examples contained in sections below/above.

Geometric artifacts (circular and discoid objects, spheroids, rhomboids, triangles, etc.):

- (See under Stone Arrangements, below; and under Image and Representation the two sites, one Aterian and one M.A.T. from Har Karkom)

Stone arrangements (heaps of stones, cairns, geoglyphs):

- El Guettar, Tunisia, 'Mousterian with foliates, tanged points' '// Tabun C' *(GM1954)*; (14C) 47±4, 57±7 ka *(AN2006)* but moist phase fauna, which is dated to Libyan, East Sahara wet phases for Aterian = 65-90 ka or 120-155 ka *(SB1995)*; in spring, pile 60 spheroids, 1 tanged point in base center of pile, elongated points near top, apex spheroid white cortex, flaked black one pole, red ochre other pole; triangle and lozenge plaques at base *(GM1954)*
- Windhoek, Namibia, no date but 'earliest' MSA, in pile 1.3 meters in diameter, 75 cm. high, 36 spheroids (35 of 'fine crystalline quartz', 1 of 'red sandstone') each weighting 600-1200 g, mostly 8-10 cm. diameter, all have notch 1.5 cm diameter and a 'few' mm. deep *(FG1954)*;

    - Pomongwe Cave, Zimbabwe;
    - Hollow Rock Shelter, South Africa;
    - Bambata Cave, Zimbabwe;
    - Olieboompoort, Transvaal, South Africa;
    - Border Cave, South Africa, HP Level;
    - Klasies River Mouth, South Africa, HP Level;
    - Apollo 11 Cave, Namibia, HP Level;
    - Cave of Hearths, South Africa, HP Level;
    - Howiesons Poort, South Africa, HP Level;
    - Boomplaas Cave, South Africa, HP Level;
    - Rose Cottage Cave, South Africa, MSA II and HP Levels
    - ≠Gi, Botswana, 'Bambatan', ~70-80 ka
    - Rhino Cave, Botswana (specularite mining)
    - Die Kelders Cave, South Africa 'Late MSA' at ~60-70 ka
- Malakunanja II, Kakadu, Australia, ~52 ka *(RR1990; OJ2004)*, core-and-scraper tradition tools *(RR1990; FJ1990)*, ground hematite, red and yellow ochres, grindstone*(RR1990; FJ1990)*;
- Nauwalabila I, Kakadu, Australia, core-and-scraper tradition tools, ~53 and ~60 ka, but these dates are questioned *(RR1990; BM2000; OJ2004)*, 1 kg piece of hematite bearing ground facets and striations—clear signs of scraping to produce powder paint *(FJ1990)*;
- Carpenter's Gap, Kimberley, Australia (calibrated AMS) max. 44 ka *(GR2002)*, exfoliated rock fragment with red pigment painted on it in layer with ochre *(FJ1997)*.

Evidence for self-adornment (perforated objects, beads, pendants, ornaments):

- Four sites of Aterian tradition, generally dated to OIS5 ~74-130 ka or earlier:
    - Oued Djebanna, Algeria, perforated shell of *Arcularia gibbonsula (MS2000)*;
    - Taforalt Cave, Algeria, perforated marine shells from ~35km away *(Nick Barton, online)*;
    - Seggédim, eastern Niger, 4 drilled quartzite flakes, probable pendants *(MS2000)*;
    - Grotte Zouhra, Morocco, bone pendant *(MS2000)*
- Blombos Cave, South Africa, MII(CF): 2 and MI: 39 *Nassarius* (tick) shell beads, perforated, with string wear, (~OIS5a 75-85 ka) *(HC1997, HC2001, HC2002; DF2001, DF2005; SM2004; HC2004)*;
- Cave of Hearths, South Africa - Bed 9, Howiesons Poort (~70 ka), broken circular ostrich eggshell pendant, 3 cm diameter, central perforation *(MS2000)*;
- Devil's Lair, Australia, ~41-46 ka *(OJ2004)*, bird bone pendant, 3 bone beads, 1 naturally perforated flat marl pebble with 4 wear grooves, possibly as pendant *(FJ1990; BR2003; BR1997; FJ1990)*.

Incised, serrated or notched objects (bone, eggshell, ochre, stone, wood):

- Dar-es-Soltan I and II, Morocco, Aterian, (AAR) 60-70 ka *(RJ2004)*, or Libyan Aterian 60-90 ka,'enigmatic heap of sandstone slabs, 1 meter diameter, 30 cm high' *(MS2000)*.

Image and representation (petroglyphs, painted or sculpted anthropomorphic, zoomorphic or abstract figurations and other 'rock art'):

- Mumbwa Caves, central Zambia, Basal MSA, OIS5e *(BLP2002; BL1995)*, probably natural, anthropomorphic piece *(BR2003)*;
- Rhino Cave, Tsodilo Hills, Botswana, (industry // ≠Gi) ~77 ka, ritual deposition' of finely made quartz and rock crystal, polished points, those with red color burnt white; rock wall of cupules and abraded grooves, engravers in MSA level, 'image of python' *(S. Coulson interviews on line)*;
- Har Karkom, central Negev, Israel HK190a, 190b and several other sites: Mousterian of Acheulian Tradition *(AE2006)*; rhomboid with engraved circle 'navel' figurine, 2 other possible 'female' figurines, fluid-shaped 'pick'; triangular nuclei with 'vulva' and possible zoomorphs *(JBH, OriginsNet.org online)*;
- Har Karkom, central Negev, Israel, HK148b, Aterian, hut floor *(AE2006)*, North and Northeast Africa dated OIS5 74-130 ka or earlier, around inside perimeter of hut floor zoomorphic, anthropomorphic and geometric figurines *(JBH, OriginsNet.org online)*.

Language, geometric signs and other 'language-like' marking traditions:

- Qafzeh, Israel, ~85-100 ka—(see more details above under section on mortuary practices) —1/3rd meter away from Q8 burial, broken Levallois core (recurrent centripetal flaking), triangular flat surface, 'plaquette', incised with mostly parallel stroke marks truncated by accidental break or intentional snap; grinding between two sets of lines and associated ochre fragment with scrape marks on both faces *(HE1997; HE2003)*;
- Blombos Cave, South Africa, M1 and M2 (~OIS5a 75-85 ka), MI: Stillbay, 1 mandibular fragment engraved with '11 subparallel lines and 1 obliquely crossing line'; 2 geometrically engraved ochre pieces (1 with tri-line over row Xs 1 crosshatched) *(HC1997, HC2001, HC2002; DF2001, DF2005; SM2004; HC2004)*;
- Howiesons Poort, South Africa – H.P Level, 1 hematite fragment, ground trihedral base with 18 (3, 11, 4) notches along its three edges *(SP1928)*.

To see how the variety of symbolic behaviors that might occur at a single sight please see sites identified in the Synoptic tables.

From this review it would seem that Mid-MSA/MP *Homo sapiens sapiens* directly practiced or had evident capacity for virtually all the technological activities and symbolic behaviors that in the past were thought to be the province of LSA/UP *Homo sapiens sapiens* (see also MS2000).

Late-Middle Paleolithic (Late-Middle Stone Age) (~30 to 60 ka; OIS 3 ~24-59 ka; African dry spell 20-60 ka). This technology represents the final evolution of MSA/MP contemporaneous with Early LSA industries and there is apparently some cultural exchange among the makers of these distinct industries. In this regard the Late-MSA/MP is analogous to the earlier late-stage evolutions in the overall pattern of human cultural evolution, namely the Developed Oldowan, with Early Acheulian influence, and the Final Acheulian, with Early MSA/MP influence.

Late-Middle Paleolithic (Late-Middle Stone Age) tool technology is characterized in Africa by continuous Levallois for production of blades as in UP and thin flakes, or single, double platform or radial cores for flakes and blades; small flake tools with high % denticulates; notches, Tayac point, end- and sidescrapers; but absence of LSA geometrics and backed pieces like Howiesons Poort and no bifacial points like Stillbay *(KR2004)*. The Levantine variant, Tabun B, is characterized by a return to triangular blanks, removed from mainly unipolar convergent Levallois cores, broad-based Levallois points; short thin flakes and some blades; also radially prepared cores in upper contexts of Tabun B *(BO1995)*.

Again as with the Mid-MP, the earliest occurrence of Late MP technology appears to be Tabun Cave, Mt. Carmel, Israel, type-site for the Late Levallois Mousterian 'Tabun B' industry, (ESR, U-series) 104+33/-14 ka *(GR2000)*, which is associated with *Homo neanderthalis*. Setting aside this dating with its wide uncertainties, the next reported occurrences seem to be Taramsa 1, Upper Egypt (Conc. 28), (OSL) 55.5±3.7 ka, where it is associated with a *Homo sapiens sapiens* burial *(VPP1998)* and Kebara Cave – F, (TL) 48.3±3.5 ka to 61.6±3.6 ka (MN1994, VH1998) also associated with *Homo neanderthalis (BO1992; BO1993)*.

Interestingly, the fact that *Homo neanderthalis* seems to be in the Levant with Tabun B technology while *Homo sapiens sapiens* is in Egypt with a different Late MP technology might imply that *sapiens* with Late MP in Africa were more confined to Africa than in earlier periods. In any event clearly each 'species' has the capacity to independently evolve Late MP industries.

Late MP technology seems to make an early appearance in India at sites in Attirampakkam, Tamil Nadu, (ESR) 45-50 ka *(BB2005, PSG2003, PS2003)*, a 'Late MP/UP' with knives, points and rare handaxes and cleavers *(PS2001)*. Around the same time, Late MP occurs at Bhimbetka III F-23, Madhya Pradesh, Layers 4-5 (EIP preliminary OSL) 45±8 ka *(BR2005)*, a 'middle to late phase of MP' with blade and flake-blade cores, blades, knives, and burins *(JH2005)* and Kalpi, Yamuna Valley, Ganga Plains, Uttar Pradesh, (TL) ~45 ka, an 'MP with choppers' *(CP2006)*. These sites alone suggest that perhaps Tamil Nadu ('the coastal route') remained strongly influenced by its Acheulian roots and thus a local convergent evolution of Late MP, while there was likely a Narmada Crossing, at least over to the Betwa River and down to the Yamuna near Kalpi and on to the Ganges and eastward. Or were these each local developments building on their Mid-MP base?

Sites reported for Southeast Asia in the Late MP period are sparse, but two that might be so classified appear to be Kota Tampan, Malaysia, (14C) ~31 ka *(OJ2004)*, which has assemblages of pebble cores, chopping tools, proto-bifaces, and flake tools such as knives

(WJ1982) and Tabon Cave, Philippines, Level III (14C) 23.2±1 ka to Level IV >30.1±1.1, with a core, scraper, denticulate tool kit associated 'robust' featured *Homo sapiens sapiens*, (U-series) 16.5±2 ka *(DEF2002)*.

A Little Note on Australia

Given the patterns and trends of human cultural evolution so far reviewed—including the repeated pattern since Oldowan times of paradigmatic changes in stone tool technologies that pass through Early, Middle and Late phases with the Early phase of the next paradigm overlapping more or less the Late phase of the previous paradigm—and if it is accepted that Mid-MP industries arrive in Southeast Asia around 75 ka and Australia around 55 ka or not long thereafter, then the questions arise: does Australia evidence a Late-MP phase? What would be the time boundary between Mid-MP and Late-MP in Australia? If we can distinguish or even hypothesize an Australian Late-MP, does the data suggest or require or do the patterns of cultural evolution become more clear if we make a vertical differentiation—like that in other regions across the Southern Route—between Late-MP and an overlapping Early-UP?

I believe the data, as limited as my database is and as sparse as the research base may be, provides some positive answers to each of these questions.

There are a few recent datings of Australian rock art that call for reorganizing the chronological sequencing of rock art 'styles'. New sites or new perspectives on old sites seem to tentatively suggest a need to re-think the notion that there is a 50,000 year stasis in Australian tool technology until the appearance of microlithic technologies about 5,000 years ago. (Does any hominin sit still for this long?)

I will make a very preliminary hypothesis, and one that inevitably is somewhat arbitrary. I call this 'cutting the Gordian knot' of Australian archaeology and rock art. First, I suggest that we posit a Mid-MP/Late-MP boundary at around 30/35 ka. Second, I suggest positing a vertical cut that differentiates Late-MP from Early-UP industries and rock art 'styles'. Third, following on these two 'cuts', I suggest labeling the 5 ka microlithic industries as characteristically 'Mid-UP', or what in previous overviews of Europe and African archaeology were generally labeled as 'UP/LSA'.

I think such a classificatory scheme would bring more clarity to Australian prehistory and show it to be not dissimilar from Late MP, Early UP and UP cultural evolution across the Southern Route and, indeed, across neighboring Europe and Northern Asia.

* * *

Keeping this Little Note on Australia in mind, while Australian archaeology is sometimes viewed as a long stasis followed by Holocene innovation of microlithic technology, I propose that Australia has its own 'Late-MP', which I suggest we posit as beginning roughly around 30 ka. I am not suggesting that a 'Late-MP' arrived from outside Australia but that a Late-MP actually appears to occur in Australia and it seems to be a local innovation of the earlier Mid-MP industries in Australia.

Perhaps we might begin with a site like Ngarrabullgan Cave Level 3, Queensland, (calibrated AMS): 36±2 ka *(GR2002)*, which has evidence of processing starchy grains and fibers; resin hafted woodworking and possible skin-working *(FR1997)* and Sandy Creek I Lower, Cape York, (14C calibrated) 34.4 ka, in which occurs quartz worked by split pebble core reduction and a ground-edge axe, waisted and grooved *(MJ1995)*. Other subsequent sites, which we might tentatively assign to 'Late-MP' might be Mandu Mandu; Sandy Creek II; Woodstock 65B; Mushroom Rock West; New Guinea II, Snowy River; and Kalate Egeanda Cave, Papua, which collectively show evidence for pigment use, rock art painting and petroglyphs (digital fluting, petroglyphs of cupules, circles, and lines), and shell beads. All of these symbolic behaviors were already well within the capacity of Mid-MP *Homo sapiens sapiens*. Perhaps we might also classify the remarkable Koonalda Cave, Nullarbor Plain, (14C calibrated) 16-27 ka *(GR2002)* as Late-MP, as it has an 'MP' flint quarry and extensive rock art, the type-site of the 'Koonalda style' *(WR1971)*. I am tempted to include in this Late-MP list burials such as Kow Swamp, (OSL) ~19-22 ka, and Lake Nitchie, (14C) 6.5-7.0 ka, with their 'robust' or 'archaic' *H. sapiens (FJ19990; FJ1983)*, or, on the other hand, one might considered these sites of a different order.

In East Asia, Late MP occurs in South Korea at Myoungo-ri, (est.) ~40-50 ka, 'Late MP' with bifaces, choppers, picks, points, denticulates, knives, notches *(BK1992)* and at sites in the Imjin-Hantan Basin, >29.4±1.9 ka. The latter is described as 'Late MP contemporaneous with UP' with choppers, handaxes, picks, notches, denticulates, backed knives, trapezoids, 'pseudo-prismatic cores', points and awls *(SC2004)*. Such Late MP sites are probably the work of *sapiens sapiens* given Ryonggok Cave, North Korea, (Useries) 46-48 ka *(NC2000)*, with five *Homo sapiens*, cranial capacity 1450 to 1650cc *(BK1992)*, the average of which actually matches that of *early H. sapiens sapiens* Skhul-Qafzeh and Cro-Magnon.

Overall the earliest Late MP sites identified appear to have something of a time gradient, perhaps earliest in Southwest Asia (~70/100 ka), or possibly later if the Tabun Cave B dates are too high, and if so at least ~60 ka, and in Africa (~55 ka), India (~45-50 ka), Southeast Asia (~30 ka). China (~40-50 ka) and Australia (~30-35 ka). Given that these regions have already seen a strong Mid-MP 'dispersal', that Africa and other regions in OIS3 are confronted with serious arid conditions, and that apparently Neanderthals are bearers of Tabun B Late MP in the Levant, the archaeological evidence seems to suggest that Late MP innovations are local to each region, convergent evolutions, the apparent time gradient of which simply reflects the time gradient of Mid-MP 'dispersal' of *Homo sapiens sapiens.*

It should be noted again that Africa as well as other regions along the Southern Route experienced arid climate during the period 20 ka to 60 ka that covers the entire period during which the Late-MP—as well as the contemporaneous UP—technologies emerged across the Southern Route. The difficulty of physical 'migration' during such a period would seem to preclude such movements and further support the view that EUP and Mid-UP technological and symbolic behavior innovations were independent and multi-regional.

The following table lists the earliest sites as mentioned in the preceding MP sections by region both for summary and for ready comparison of dates. Since the Early-UP, which will be discussed in the next section, is contemporaneous with the Late-MP I include it in this table.

EARLY-MP/EARLY-MSA				
Olorgesailie, Kenya	Tabun, D, Israel	16R Dune, India	(TW. Nakin, Thailand)	(Zhoukoudian, China)
~225-340 or ~280 ka	~260 ka	~150 ka	(~130-169 ka)	(~250)
MID-MP/MID-MSA				
(Omo Kibish, Ethiop.)	Tabun, C, Israel			
(~195 ka)	~130-200 ka			
Mumba, Tanzania	Hayonim, Israel	Patpara, India	Liang Bua, Flores	(Bailiandong, China)
~130	~150 ka	~100 ka	~75 & Austral. ~55 ka	(~<160 ka)
LATE-MP/LATE-MSA				
Taramsa, Egypt	Tabun, B, Israel	Attirampakkam, India	Sandy Creek I, Austrl.	Myoungo-ri, S. Korea
~55 ka	~70/100 or ~60 ka	~45-50 ka	~30 ka	~40-50 ka
EARLY-UP/EARLY-LSA				
White Paintings, Botswana	Boker Tachtit, Israel	Site 55, Pakistan	Leang Burung, South Sulawesi	Shiyu, China
~50/60 ka	~>45	~45 ka	~22-31 & Austr >28 ka	~32 ka
'MICROBLADE' MID-LATE-UP/MID-LATE-LSA (very limited review)				
Ntumot, Kenya	Ksar Akil, Lebanon (Aurignacian)	Patne, India	Mushroom Rock West Australia	Sokchang-ni, South Korea
~30-32 ka	~32 ka	~25 ka	~5 ka	~21 ka

With respect to evidence for symbolic behavior in the Late MP—and given that it is likely multi-regional—I will not attempt to summarize my review here. The Synoptic gives a full list of sites and artifacts I identified in my meta-review.

Upper Paleolithic (Later Stone Age) (~5 to 60 ka; OIS3 ~24-59 ka; African dry spell 20-60 ka). Early, Middle and Late Upper Paleolithic/Early, Middle and Late Later Stone Age tool industries are characterized by retouched blades and bladelets, scrapers on blades, small and microlithic tools; bone tools, soft hammer, and even more art than prior periods.

Earliest occurrences of Early Upper Paleolithic (Early Later Stone Age) in Africa include White Paintings Rock Shelter, Tsodilo Hills, Botswana, (OSL) 55.4±4.7 ka *(RR1997)* or 38-50 ka *(MS2000)*, classified as 'MSA/LSA'; Olduvai Gorge, Naisiusiu Beds, (ESR) 60±10 ka, (AMS) >42 ka, Early LSA 'Lemuta industry' *(AS2002)*; and Enkapune ya Muto Shelter (GtJi12), Kenya, MSA/LSA Endingi industry, (14C) 39.9±1.6 or ~37-40 ka or >50 ka; LSA Nasampolai industry, ~40-50 ka *(MS2000; AS2002; AS1998)*.

Perhaps later, or given the various datings, perhaps concurrently, the earliest EUP in the Levant is reported to be Boker Tachtit, Negev, Level 2, (14C) >45.49,46.93±2.42, 47.28±9 ka; *(MA1983)*. This industry has been termed the 'Bohunician Behavioral Package' that dispersed to central Europe Europe (~43-36 ka) and Karim Bom, Altai, Siberia (~43 ka) *(TG2003)*. The Egyptian site of Taramsa 1 – Conc. 28 toolkit is referred to as Late MP and at the same time compared to Boker Tachtit EUP *(VPP1998)*, a typological comparison the value of which I am not in a position to judge, so I simply classify it for this review as Late MP. EUP occurs at Ksar Akil, Lebanon, (14C underlying EUP) 43.75±1.5 ka *(MA1983)* and Kebara Cave E, Mt. Carmel,

E -IV (AMS) 42.5±1.8 ka *(BO1992)*. EUP is reported from Har Karkom, Negev, the 'Karkomian', with extensive portable and standing stone rock art.

Virtually at the same time as it appears in the Levant, assemblages designated EUP appear in South Asia, the earliest report, Site 55, Pakistan, ~45 ka, with flake blades and microblades *(CP2006, JH2005)*. It occurs at Chandresal, Chambal Valley, Rajasthan, (14C) 38.9±0.7 ka, with blades, small and tanged points, and lunates *(KG1988)* and Bhimbetka III A-28 with a *Homo sapiens sapiens* burial *(KG1988)*. It seems to reach Sri Lanka at Fa Hien Cave, 31 ka; with geometric microliths and *Homo sapiens sapiens (JH2005)*. Considering these and other sites in our Synoptic there is obviously strong evidence for use of a Narmada Crossing, which by this time most probably went both ways. It occurs at Leang Burung, South Sulawesi, (14C) ~22-31 ka, with blade core and blades, with phytolith edge gloss *(GI1981; OJ2004)*.

As noted earlier, I suggest the hypothesis that we allow a 'UP' classification for some sites in Australia beginning around ~30 ka, when, as noted earlier, there appears to be the emergence of a contemporaneous Late MP. Thus the Australian situation is not so dissimilar when compared to the same kind of overlapping technology modes as occurs in other regions across the Southern Route. Blades occur at Mushroom Rock West, Cape York, lower level, (TL) 27-29 ka and blade and burin cores, scrapers, and adze, middle levels, (TL) 20.7±3 ka to 9.5±1.9 ka or (14C) ~10-15 ka *(MJc1995; MJa1995)*. Blades and ground axe occur at Sandy Creek II, (AMS direct on painting, calibrated) 15-16 ka *(CN1995)*. I see no strong evidence to say either way whether we are seeing an Australian convergent innovation of EUP industries or some sort of diffusion.

However, I do think that an apparent sequencing of rock art in Australia supports the hypothesis that this Australian 'UP' is a convergent innovation. I suggest that rock art petroglyph styles designated 'Karake' and 'Panaramitee' reflect a symbolic evolution remarkably similar to that of geometric sign systems in Europe from Aurignacian to Magdalenian, even happening with similar timing. I leave aside for now the question how such an remarkable independent convergent evolution is to be understood.

The first absolute dated occurrence of 'Karake style' rock art is Malangine Cave, South Australia, (Useries minimum) ~28 ka *(BR1999)*. The 'Karake style' could be viewed, I think, as roughly contemporaneous with the 'Koonalda style' digital fluting petroglyphs. This 'Koonalda style' might be viewed as a parallel 'UP' tradition or, I very tentatively suggest, actually a Late-MP rock art tradition. Since Bednarik at Malangine has demonstrated that 'Karake' petroglyphs are superimposed on digital fluting, it follows that digital fluting at some sites will eventually be dated earlier than 30 ka during the Australian Mid-MP, which extends back to near 60 ka. This Karake-style and its contemporaries give way or evolve 'Panaramitee style' petroglyphs, which appear first around 15 ka. Earliest datings for Panaramitee style reviewed here appear to be Sandy Creek I and Early Man Shelter, both in Cape York, both with (14C calibrated) dates of 14.4 ka.

Similarly to South East Asia and Australia, UP industries seem first to appear in East Asia around the same time, ~30 ka. Examples are Shiyu Lower, Shanxi, China, (14C) 32 ka *(BR1991)*, which has an assemblage said to 'combine MP and UP features' *(BR1991)* and which I take to be EUP. At Hinatabayashi B, Nagano, Japan, ~30 ka, UP ground and polished tools

occur *(TNM)*. UP occurs at Zhoukoudian, Upper Cave, (AMS) ~24-29 ka *(BP2006)*, with a stunning status burial, *Homo sapiens sapiens (CD2003; WJ1982)*.

Over the 'Southern Route' it does appear that there is a mild time gradient West to East. EUP/ELSA industries and symbolic behavior seem first to occur in Africa (~50/60 ka), then Southwest Asia (~47), South Asia (~45 ka), Southeast Asia (~30 ka), Australia (~30 ka) and East Asia (~30 ka). However, considering the dates it appears possible that EUP may have diffused from Africa to Southwest Asia and then South Asia but the simultaneous dates for Southeast Asia, Australia and East Asia suggest that in these regions and, thus, possibly all regions EUP industries may reflect independent, multi-regional convergent innovations built on shared Mid-MP technologies and symbolic behavior.

Micro-Bladelet Mid- and Late-UP. As the focus of this meta-review has been the question of the occurrence of major 'waves' of globalization in modes of toolmaking and symbolic behavior and given the mass of research findings available on Upper Paleolithic sites across the regions, I gathered only highlights of a partial subset of sites. Keeping this limitation in mind, considering Mid-UP assemblages, especially those using microblade core reduction for bladelets and backed blades and bladelets, by region it appears that this specialized technology appears in Africa around 30 ka. Backed microliths occur at Enkapune ya Muto Shelter, Kenya, from the earliest EUP level almost ~50 ka *(AS1998)*, though if counted as EUP, then early microblades occur, for example, at Ntumot, Ntuka River, Kenya, (14C, AAR) ~30-32 ka *(AS2002)*.

Specialized microblade and bladelet industries appear in the Levantine Aurignacian at Ksar Akil, Lebanon, (14C) 32 ka *(CG1989)*. Roughly in the same Mid-UP timeframe, though starting somewhat earlier, is the Lagaman industry of the Sinai-Negev area, e.g., Abu Noshra II, southern Sinai, Egypt, (14C) 38-39 ka *(KS1999, GI1999)* and Qadesh Barnea, northeast Sinai, Egypt, (14C) 32-34 ka *(GI1993)*, which has a blade technology that generally lacks microblade core reduction and Aurignacian-type endscrapers and blades, and hence is sometimes classified as EUP. With apparently similar dates a fully microlithic 'Atlitian/UP Stage 5' industry appears at Ksar Akil, Lebanon, (AMS) ~31-32 ka *(MP1989)*, an industry type continuing until ~20 ka, giving way to the Early Kebaran Mesolithic/Epipaleolithic ~20-30 ka.

In India, at Patne, Maharashtra, EUP assemblages with blade cores, retouched and untrimmed blades, backed blades, and burins evolve with 'no sudden shift' to Late UP classic prismatic blade cores for blades, microlithic blade and bladelets, geometric lunates and triangles at (14C) 25.5 ka *(JH2005)*. This implies an indigenous independent evolution of such 'classic UP' technology.

Setting aside the early appearance of burin cores and microblades at Liang Bua Cave, Flores, (ESR+U-Series) 74+14/-12 ka *(MM2004; MM2007)*, which might be viewed as a precocious innovation, perhaps comparable to the backed blades of the African Howiesons Poort in a similar time range, my review does not identify other micro-blade sites for South East Asia

Microblade tool assemblages appear in Australia by ~5 ka, for example at Mushroom Rock West, Cape York, (14C calibrated) 4.5 ka or (TL) 8.6 ka *(MJc1995; MJa1995)*. Here as

perhaps as some sites in India suggest, 'classic' Late UP industries evolve from EUP and Mid-MP precursors.

Again given my limited review, early occurrences in East Asia include 'Aurignacian-like' microblades and scrapers on blades at Sokchang-ni, South Korea, (14C) 21ka *(BK1992)* and microblades and tanged points at Suyanggae, South Korea, (14C) 16-18 ka *(LY2000)*.

Thus Mid-UP (microblade) industries seem to first occur in Africa (~40-50 ka), Southwest Asia (~32 ka), South Asia (~25 ka), Southeast Asia (~30 ka), Southeast Asia (no data), Australia (~5-9 ka) and East Asia (~21 ka). These microlithic industries appear to occur across the 'Southern Route' about 10k years later than the emergence of EUP industries although this could reflect a dispersal at around ~40-50 ka it could just as well be convergent innovation in each region. This is the most likely hypothesis for Australia and perhaps also Southeast Asia. Also the contemporaneous dating for the Aurignacian and Atlitian in the Levant is further indication of a mosaic of multi-regional evolution.

Further, it should be noted, as I did for Late MP, that Africa as well as other regions along the Southern Route experienced arid climate during the period 20 ka to 60 ka that covers the entire period during which the EUP and Mid-UP technologies emerged across the Southern Route. The difficulty of physical 'migration' during such a period would seem to preclude such movements and further support the view that EUP and Mid-UP technological and symbolic behavior innovations were independent and multi-regional.

With respect to evidence for symbolic behavior during the UP/LSA this evidence is discussed extensively in the literature and I will not even attempt to summarize here. The Synoptic notes the sites that I was able to identify in my meta-review.

Conclusions. The combined table below gives an overview of the earliest sites—the ones with generally accepted dating, classification of stone assemblage, and hominid fossils—by period by region during the course of human evolution. Given the limits of the meta-review I offer several conclusions.

- There appears to be a general West to East time gradient for each of the 12 major periods of evolution.

- Based on archaeological data alone it is not prima facie evident from these gradients whether they reflect physical dispersal (migration), diffusion of technology and symbolic behavior, or independent, multi-regional innovations.

- Setting aside the separate question of physical migration (and speciation) it can be inferred from the review that during the course of human evolution there were at least three periods of 'globalized' (i.e., across the regions of the Southern Route) dispersal of technology and symbolic behavior:
    - Classic Oldowan
    - Middle Acheulian
    - Mid-Middle Paleolithic.

- Corollary 1: This implies globalization across the Southern Route of three of the major 'technological modes', Mode I (core and flake industries), Mode II (direct percussion of more formally shaped pieces), and Mode III (prepared core).

- Corollary 2: Giving the time gradients, it appears that the Classic Oldowan, Middle Acheulian and Mid-Middle Paleolithic reflect dispersal out-of-Africa, with the caveat that the Mid-MP just might have originated in and dispersed out of Southwest Asia.

- Corollary 3: This review does not strongly indicate if Mode IV (blade and burin) and Mode V (microliths) technologies spread across the Southern Route by exchange diffusion, multi-regional convergent innovation or migratory dispersal, but appears to not show any continuous dispersal from Africa (or SW Asia) to Sahul-Australia.

- Corollary 4: Across the Southern Route regions, the review suggests that the deep roots of symbolic behavior, including palaeoart and protolanguage grow out of Classic Oldowan, Middle Acheulian and Mid-Middle Paleolithic strata.

- Again with the caveat 'based on this meta-review', these are the archaeology-based dates for *Homo sapiens sapiens* dispersal of Mid-MP technology and symbolic behavior:

(Omo Kibish, Ethiopia)	Tabun, C, Israel		
(~195 ka)	~130-200 ka		
Mumba, Tanzania	Hayonim, Israel	Patpara, India	Liang Bua, Flores
~130	~150 ka	~100 ka	~75
			Australia ~55 ka

- *Homo sapiens sapiens* dispersed out-of-Africa (or Southwest Asia)—assuming that this is not a case of multi-regional convergent evolution sometime beginning around ~130-150 ka. (New archaeological discoveries might show that *Homo sapiens sapiens* left even earlier, closer to Omo Kibish at ~195 ka.)

- The earliest possible dates for Africa and Southwest Asia to India fall in the OIS 5 – OIS 6 (OIS5c 96 ka to end OIS6 190 ka) range, the more conservative dates of ~150 to ~100 fall squarely in the interglacial (OIS5e ~110-130 ka – with declining aridity beginning ~150 ka), which would have had the optimal moist climate to support both physical migration and social exchange.

- Corollary 5. Across Southern Route regions, Upper Paleolithic and especially Upper Paleolithic microblade industries like the Aurignacian appear to reflect, in whole or part, indigenous, convergent innovations that build on a shared multi-regional Mid-Middle Paleolithic base that has, as the review shows, an extensive capacity for symbolic behavior/palaeoart.

A table summarizing the meta-review of early archaeological site dating by region and time period follows. An Appendix: Synoptic Database For 'Southern Route' Globalizations Across Africa, Southwest Asia, South Asia, Se Asia, E Asia – is attached at end of this paper.

GLOBALIZATIONS ON THE SOUTHERN ROUTE – EARLIEST SITES BY REGION (Sites in parenthesis are hominid fossil sites which do not have associated stone assemblages or they are not diagnostic)				
EARLY OLDOWAN				
AFRICA	**SOUTHWEST ASIA**	**SOUTH ASIA**	**SE ASIA & SAHUL**	**EAST ASIA**
Ounda Gona, Ethiop.				
~2.5 Ma				
CLASSIC OLDOWAN				
Koobi For a, Kenya	Dmanisi, Gerogia	Pabbi Hills, Pakistan		Majuangou, China
~1.9 Ma	~1.8 Ma	>1.4 Ma		~1.6 Ma
DEVELOPED OLDOWAN				
Karari, Kenya	Ubeidiya, Israel	Pabbi Hills, Pakistan	Sangiran, Java	Xiaochangliang China
~1.65 Ma	~1.6 Ma	~1.2-1.4 Ma	~1.1-1.5 Ma	~1.36 Ma
EARLY ACHEULIAN				
Olduvai, Tanzania	Ubeidiya, Israel	Isampur, India		(GongwanglingChina)
~1.5-1.7 Ma	~1.2-1.6 Ma	~1.0 Ma		(~1.2 Ma)
MIDDLE ACHEULIAN				
Olorgesailie, Kenya	Bizat Ruhama, Israel	Attirampakkam, India		Bose, China
~990 ka	~850-900 ka	~780 ka		~803 ka
LATE ACHEULIAN				
Bodo, Ethiopia	Berekhat Ram, Israel	Sadab, Hunsgi, India		Zhoukoudian, China
~550-640 ka	~470 ka	~290 ka		~400-500 ka
(Well-established Narmada Crossing by ~200 ka)				
FINAL ACHEULIAN				
Kapthurin, Kenya	Tabun, E, Israel	Bori, India		Luonan, China
~>285 ka	~300 ka	~200 ka		~250 ka
EARLY-MP/EARLY-MSA				
Olorgesailie, Kenya	Tabun, D, Israel	16R Dune, India	(TW. Nakin, Thailand)	(Zhoukoudian, China)
~225-340 or ~280 ka	~260 ka	~150 ka	(~130-169 ka)	(~250)
MID-MP/MID-MSA				
(Omo Kibish, Ethiop.)	Tabun, C, Israel			
(~195 ka)	~130-200 ka			
Mumba, Tanzania	Hayonim, Israel	Patpara, India	Liang Bua, Flores	(Bailiandong, China)
~130	~150 ka	~100 ka	~75 & Austral. ~55 ka	(~<160 ka)
LATE-MP/LATE-MSA				
Taramsa, Egypt	Tabun, B, Israel	Attirampakkam, India	Sandy Creek I, Austrl.	Myoungo-ri, S. Korea
~55 ka	~70/100 or ~60 ka	~45-50 ka	~30 ka	~40-50 ka
EARLY-UP/EARLY-LSA				
White Paintings, Bots	Boker Tachtit, Israel	Site 55, Pakistan	L. Burung, S Sulawesi	Shiyu, China
~50/60 ka	~>45	~45 ka	22-31 & Austr >28 ka	~32 ka
'MICROBLADE' MID-LATE-UP/MID-LATE-LSA				
Ntumot, Kenya	Ksar Akil, Lebanon	Patne, India	Mushroom Rock West	Sokchang-ni, S Korea
~30-32 ka	~32 ka	~25 ka	~5 ka	~21 ka

Implications. These conclusions have implications for some current hypotheses about the timing of technological innovation, symbolic behavior and *Homo sapiens sapiens* 'out-of-Africa'. I will mention only a few.

- A view still widely held is that *Homo sapiens sapiens* first left Africa or Southwest Asia bearing an Upper Paleolithic technological and symbolic behavior 'package' by around 50 ka. When Australian sites were clearly dated to this time if not earlier, this hypothesis was raised to around 60 ka. Even this hypothesis could not fit the archaeological data that *Homo sapiens sapiens* arrives in Australia by ~55 ka if not earlier and arrives bearing a Mid-MP 'package'. Among other problems with this hypothesis is the 20-60 ka arid and hyperarid climate across the Southern Route during OIS3 which would not have supported a major dispersal (see Field and Lahr 2005).

- Field and Lahr (2005) use GIS-based analyses as support for the hypothesis that *Homo sapiens sapiens* dispersed from Africa not in OIS3, but OIS4 (59-74 ka). Did some population(s) disperse out-of-Africa (or, given the archaeological data, possibly out of Southwest Asia) during this time period carrying, as the authors suggest—and our meta-review confirms—a Mid-MP 'package' all the way to Australia. Our meta-review suggests that an OIS4 timing seems inconsistent with the arrival of Mid-MP type industries at Patpara, India ~100 ka, Liang Bua, Flores ~75 ka and Australia by ~55 ka. Patpara, India alone favors dispersal of Mid-MP during OIS5e (~111-130 ka).

- Recently in *Mother Tongue*, Bancel and Matthey de l'Etang (2004, 2002) and Matthey de l'Etang and Bancel (2002) reconstructed kinships system terms for Proto-Sapiens, which they suggest must be at least 50,000 years old. Bengston and Ruhlen (1994) offers additional etymologies for such a global language. Given the conclusions of my meta-review, I suggest that Proto-Sapiens or Global likely represents a global language that was part and parcel of the Mid-Middle Paleolithic 'package' that dispersed across the Southern Route around 120,000 years ago, well prior to any diffusion of Upper Paleolithic.

- If a primary *Homo sapiens sapiens* dispersal occurred during OIS5e, this has implications for current genetics-based hypotheses for 'out-of-Africa' dispersal. I leave it at that.

In invitation and challenge, Hal Fleming, the editor of *Mother Tongue*, asked: 'we can presume from the evidence that modern people left East African and the Levant as early as 125,000 years ago and if so we might find them in India at later dates, say 100,000 or so, or not, as the case may be. Then somehow they move through or alongside (coastwise) the great Sundaland expanse, at unknown dates, and finally arrive somewhere in Australia probably closer to 60,000 than anything else. What we most want is evidence from archeology that confirms or refutes these probabilities.' I believe this meta-review, by a long and winding road, confirms just that and more.

Selected References

(Full bibliographical references, which in the Synoptic Database and the narrative meta-review are given in italicized format, e.g., *(MS2000)*, are found in the complete bibliography, which is posted as Supporting Online Materials at originsnet.org/publications.)

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Supporting Online Materials
(posted at: originsnet.org/publications)

A. Master databases of archaeological sites by region:
   1. Synopsis of the Paleolithic – Africa
   2. Synopsis of the Paleolithic – Southwestern Asia
   3. Synopsis of the Paleolithic – India
   4. Synopsis of the Paleolithic – Australia And Se Asia
   5. Synopsis of the Paleolithic – East Asia (China, Korea, Japan)

B. References. (Complete bibliographic references for the Master Database and referenced in this meta-review and Appendix: Synoptic Database)

Appendix: Synoptic Database For 'Southern Route' Globalizations Across Africa, Southwest Asia, South Asia, SE Asia, and E Asia (follows)

SYNOPTIC DATABASE FOR 'SOUTHERN ROUTE' GLOBALIZATIONS ACROSS AFRICA, SOUTHWEST ASIA, SOUTH ASIA, SE ASIA, E ASIA

(A selection of earliest known dated sites for a given period/technological mode or cultural facies
and comprehensive list of sites with evidence for symbolic behavior, latter indicated by turquoise highlight)

AFRICA	SOUTHWEST ASIA	SOUTH ASIA	SOUTHEAST ASIA AUSTRALIA	CHINA, JAPAN, KOREA
Early Oldowan (~2.0-2.6 Ma): General technology: cores and flakes, bipolar reduction, utilized unmodified flakes, flakes not retouched, not yet standardized tool form *(SS1997)* but 'no need to posit a pre-Oldowan or Omo industry' *(KM1994)* or more precisely I suggest classifying *Australopithecus* tools and symbolic behavior as **'Pre-Oldowan'** and those of *Homo* as **'Early Oldowan'** *(JBH)*				
Bouri, Hata Member, Ethiopia (Ar/Ar, etc.) **2.45-2.50 Ma** *(HJ1999)*; 'Pre-Oldowan', cutmarks, bone breakage, no tools; *Australopithecus garhi (HJ1999)*				
Makapansgat, South Africa Member 4 (ESR, paleomag.) 2.9-3.2 *(KK1998)*; *Australopithecus africanus (DR1974)*; 'Pre-Oldowan'; natural manuported red jasperite cobble, 'figurine of many-faces' *(DR1974; BR1998; BR2003)*				
Ounda Gona, Ethiopia (Ar/Ar) **2.53±0.15-2.58 Ma**; Early Oldowan, pebble cores, flakes, ('technical blades'), flaked bone*(SS2003, SD2005)*	Yiron, northern rift, Israel (K/Ar on overlying basalt) **2.39 MYA** *(RA2006, 1991)*; [Not mentioned in regional reviews. Illustrated tools appear to be more like Developed Oldowan? – JBH]	Riwat, Upper Siwilak Formation, Pakistan (paleomag. and geostrat.) >1.9 or 2.0 – 2.1 MYA *(RH1989, MV2001)*; (revised paleomag.) **2.35 MYA** *(DR1998)* but dating is controversial *(KRP1998)*	no sites yet	Renzidong, Anhui, China (faunal) 2.0-2.5 MYA (Jin et al 2000) *(CR2000)*; (ESR) 'underestimate' at [ave. EU =1.2 MYA and ave. LU = 1.7 MYA] *(CQ2003)* but most assert not hominid tools *(CR personal com. 2006)*;
Pre-Oldowan and Early-Oldowan: evidence not yet convincing for dispersal out-of-Africa.				

'Classic' Oldowan (Lower or Early Paleolithic) (~1.4-2.0 Ma): General technology: bipolar and direct percussion, cores and flakes plus choppers, discoids, spheroids, and standardized small tools, including scrapers on flakes or fragments, rare burins and protobifaces, utilized unmodified flakes; rare worked bone				
Koobi For a and Karari, East Turkana, Kenya (K/Ar and paleomag. KBS Tuff to base Olduvai subchron) **1.88-1.95 Ma** *(IW2000, TI1988)*; associated with *Homo rudolfensis* and later occupations *Homo habilis (IW2000, TI1988) (TN1985)*; flaked pebble core with accidental 'inner rhomboid', curated *(HJ1992)*	Dmanisi, Kura River Basin, Georgia Level V-IV (fauna, tools, hominid remains palaeomag., K/Ar, Ar/Ar) **1.7-1.81 Ma** *(LH2005)*; closer to *H. rudolfensis* than *ergaster*, ergo *H. georgicus (LM2006, LH2005)* or 'close to stem of *H. erectus' (RG2006)*	Pabbi Hills, Upper Siwilak Formation, Pakistan (paleomag. and geostrat.) **>1.2-1.4 Ma** *(DR1998)*	no sites yet	Majuangou, Nihewan Basin, northern China (paleomag.) 4 artifact layers from (MJG-III) ~ **1.66 Ma** to highest (Banshan) at ~**1.32** Ma *(ZR2004)*
Olduvai Gorge, Tanzania Bed I (Ar/Ar) Naabi bedrock 2.029±.005 Ma Tuff IA **1.976±.015 Ma** Tuff IF **1.749±.007 Ma** *(WR1991)* FLK North 1: artificially pecked phonolite cobble, line of pits, vague shape of a 'baboon-head' *(LM1971, 1976; BR2003)* and 'pitted anvil', a conical block steeply flaked (high backed) all around its flat base, with deep 9 mm pecked depression *(LM1971, 1976)*; 'apparent cupule' *(BR2003)* or for nutcracking? // Gombore I, Melka-Kontouré*(GN2002)*	Erq-el-Ahmar, Israel (paleomag. Olduvai) **1.78-1.96** Ma (Verosub 1989; Ron & Levi 2001) *(PN2002, RH2003)*			

Sterkfontein Cave, South Africa Member 5 Upper (faunal): 1.4-1.7 MA *(BL2001)* Stw53 *Homo habilis* (Hughes & Tobias 1977) // OH13, SK847 *(MJ2003; CD2006)* with stone tool cutmarks; indicates earliest evidence of 'post-mortem manipulation of hominid carcasses' *(PT2000)*				
Reconstructed Classic Oldowan Route: From East Africa (~1.9 Ma) through Southwest Asia (~1.8 Ma) through Pakistan (>1.4 Ma) across South Asia and into China (~1.6 Ma).				

'Developed' Oldowan (Lower or Early Paleolithic) (~1.2-1.7 Ma): General technology: Developed Oldowan A, similar to Oldowan but reduced % core-choppers, discoids, polyhedrons and heavy-duty scrapers; though steep-edged Karari core-scrapers; more refined light-duty scrapers, denticulates, burins, 1st appearance of awls, edge-trimmed flakes, and in later phases of Developed Oldowan a few crude bifaces (influence of Early Acheulian)				
Karari and Ileret, East Turkana, Kenya 'Karari industry' sites are generally in the Okote Member, and dated around **1.65±0.05 ka** *(IW2000; SN1993)* and associated with *Homo ergaster/Homo erectus* fossils *(BF1985; GP2006)*	Ubeidiya, Israel Earliest layers – Li-cycle: K19-20, III-4-20, II-2-20 **~1.60-1.65 Ma** *(BM2006)*	[see Pabbi Hills, Pakistan above – perhaps younger dates correspond to Developed Oldowan assemblages **1.2-1.4 Ma** and in older strata *(DR1998)]*	Perning, Solo River, Java (Ar/Ar) 1.81±0.04 MYA and (paleomag) normal = Olduvai = 1.78-1.96 MYA *(SC1994; DVJ1994)* but 20 m above this *(HO2006)* (Paleomag) = Jaramillo 1.1 MYA *(HM2002, HM1993)*	Xiaochangliang, Nihewan Basin, northern China **~1.36 Ma** *(ZR2001)*; flint, quartz, volcanic rock, quartz, 86% flake scrapers, including side scrapers, notches, a few end scrapers, burins, disc cores *(ZR2001)*
Olduvai Gorge, Tanzania Developed Oldowan A in Middle Bed II: **1.5-1.66 Ma** *(MR2005)*; FLK North Sandy yielded an artificially pecked 'anvil' with 5 mm deep pecked depression in its center *(LM1971)*; 'apparent cupule' *(BR2003)* or nutcracker? *(GN2002)*; Site BK (Developed Oldowan B) **~1.5 Ma**: 2 lumps red tuff, possibly colorant *(OK1981; BR2003))*; sites associated with *H. erectus (LM1971; (WJ1982)*			Sangiran, Solo River, Java Bapang Formation, (Ar/Ar) 1.51±0.08 to 1.02±0.06 MYA *(LR2001)* (Paleomag) = Jaramillo 1.1 MYA *(HM2002, 1993)*; *Homo erectus*; shell tools *(KC2007)*; small flake tools *(WH2006; SR2006)*	Xihoudu, Ruicheng, Shanxi, China **~1.27 Ma** *(ZR2003)*; 32 quartzite, gangue, lava implements, choppers, scrapers, points *(WQ2000)*
Reconstructed Developed Oldowan Route: From East Africa (~1.65 Ma) through Southwest Asia (~1.6 Ma) through Pakistan (~1.4 Ma) across South Asia (~1.1-1.5 Ma) and into China (~1.36 Ma). Whether this is a dispersal out-of-Africa or multi-regional innovation out of prior regionalized Classic Oldowan seems an open question.				

Early Acheulian (~1.0-1.7 Ma): General technology: flake blanks used as cores, in turn used as tools, including crude handaxes with sinuous edges and large flake scars, trihedral picks, rare cleavers; large component of flakes; chopper, polyhedron, spheroid, heavy-duty scrapers; hard hammer; absence of Levallois or other prepared core techniques				
Olduvai Gorge, Tanzania Site EF-HR; probably CK; Elephant K; MLK Middle Bed II: **1.5-1.66** *(MR2005)*	Ubeidiya, Jordan River Basin, Israel – Fi-cycle sites **1.2-1.6 Ma** *(BM2006)*; some assemblages assigned to Developed Oldowan B, others to Early Acheulian *(BO1995; AB1994)*; dental fossils possibly *Homo ergaster (BM2002)*	Isampur, Hunsgi Valley, Karnataka (ESR on bone, mean age LU) 1.27±0.17 Ma and (EU minimum age) 730±100 ka *(PK2002)*; [average: **1.0 Ma** – JBH]	(See above, Perning and Sangiran within this time period but with apparent Oldowan technology)	Gongwangling, Lantian, China (paleomag.) **1.2 Ma** (Hyodo et al 2002); cores, flakes, scrapers, '1 early Acheulian biface'; *Homo erectus (LJ1998; BP2006)* Donggutuo, Nihewan Basin, northern China (paleomag.) **1.1 Ma**; tools lack diagnostic bifaces *(WH2005)*
Peninj, West Lake Natron, Tanzania Type Section **1.4-1.7 Ma** *(DM2001)*				
Konso-Gardula, Ethiopia **1.39±0.02** *(IW2000)*; associated with *H. erectus*				
Gadeb, Ethiopia Site 8E >0.7 to ~1.5 Ma *(WM1979)*; 4 ovate obsidian handaxes (source ~100 km away), 11 round cobbles with pits like Olduvai pitted anvils; several pieces red basalt, but no evidence rubbing for pigment *(CJ1979; OK1981)*				
Reconstructed EA Route: There is an apparent diffusion of Early Acheulian technology from Africa (~1.5-1.7 Ma) through Southwest Asia (~1.2-1.6 Ma) to India (~1.0 Ma) but no clearly diagnostic Early Acheulian industries east of India. Sparse sites in this time period in SE Asia and China suggest continuation of Developed Oldowan.				

<table>
<tr><td colspan="5">Middle Acheulian (~500 ka to 1 Ma): General technology: standardization of blank shape and reduction techniques (e.g., Kombewa, Victoria West in Africa); more regularized handaxe shapes (cordiform, amydaloid, lanceolate, oval), cleavers with bits made from single flat surface scars, trihedral picks, and flake tools (mostly denticulates, notches, scrapers); some assemblages only core-choppers and flakes</td></tr>
<tr><td>Olorgesailie, Kenya
Member 1 (Ar/Ar) 992±39 ka
Member 12 601±3 ka
(DA1990); Homo erectus (PR2004)</td><td>Bizat Ruhama, no. Negev, Israel
(multi-method) 850-990 ka
small tool 'microlithic' MA
(ZY2003; RA2006)</td><td>Attirampakkam, Kortallayar Valley, Tamil Nadu
(palaeomag.) ~780 ka
(PSG2003, PS2003)</td><td>Ola Bula, Soa, Flores
(ZFT) between 800±80 ka and 840±70 ka
only core-and-flake tools, but plant polish; implied watercraft</td><td>Bose, China
(AR/AR associated tektites)
803±3 ka (HY2000)
fully Middle Acheulian site among core-and-flake sites</td></tr>
<tr><td>Kariandusi, Kenya
(Ar/Ar 4 m below top of MA bearing sediments) 973±3 ka
(DA2004)</td><td>Evron Quarry, Israel
Unit 4 (multi-method) >780 ka and likely 900 ka
(RH2003)</td><td>16R Dune, Didwana, Thar Desert, Rajasthan
(Th/U) >390±50 (Raghavan, Rajaguru, Misra 1989)
(MS1992, JH2005); quartz crystal manuports (PSo2001)</td><td>Lampang and Phrae River Thailand
Ban Mae Tha and Don Mun
(paleomag.) >730K
only core-and-flake tools</td><td rowspan="2">Zhoukoudian Cave, China
Locality 1, Layers 5-10
600-800 ka (BN2004)
only core-and-flake tools
Layers 7-10: Homo erectus; Upper 8,Quartz Horizon 2: ~20 quartz crystals, 1 perfect fully faceted, probably from 7 km away (Pei 1931) and spheroids (BL1985; BR1991)</td></tr>
<tr><td>Bouri, Dakanihilyo Member, Ethiopia
(max. Ar/Ar max 1.042±.003 Ma, min. 790 ka, or ~1 Ma (AB2002);
Homo erectus (AB2002)</td><td rowspan="3">Gesher Benot Ya'aqov, Jordan River, Israel
(multi-method) OIS19, high intensity artifacts ~750-780 ka (GN2000); Homo erectus; 2 naturally perforated 'bead-like' crinoid fossils natural to site and angular quartz crystals in same deposit (GN1991); 46 pitted cores, blocks – 'nutcrackers' (GN2002)</td><td>Singi Talav, Didwana, Thar Desert, Rajasthan,
(U/Th) >390 ka (Raghavan et al 1989) (CP2004); 6 quartz crystals, no use-wear, too small for tool manufacture, non-local (d'Errico, Gaillard, Misra 1989) (BR2003, BR1993; JH2005)</td><td rowspan="2"></td></tr>
<tr><td rowspan="2">Tan Tan, Morocco
Middle Acheulian (est. age 300-500 ka) (Kuckenburg 2001) (BR2002, BR2003) but MA in Morocco currently dating 600-700 ka at Thomas Quarry, STIC Quarry, Sidi Abderrahmen, etc. (RJ2004, RJ2003, RJ1999, MS2000); anthropomorphic figurine, artificial grooves, pigment traces, earliest painted object (BR2001; BR2003)</td><td rowspan="2"></td></tr>
<tr><td>Hunsgi II, V, Hunsgi Valley, Karnataka
>350 ka for related sites in Valley (Szabo 1990) (NN2003); ochre nodules (Sankalia 1976); hematite with wear facets, striated, 'crayon' (BR1990; BR1993; BR1994)</td><td></td></tr>
<tr><td colspan="5">Reconstructed MA Route: From Africa (~990 ka) through Southwest Asia (~850-900 ka) through (coastal?) India (~780 ka) reaching China (~803 ka). Diagnostic MA assemblages not yet found in SE Asia, but sites in comparable time range may be either persisting Developed Oldowan or actually Middle Acheulian core-and-flake small tool sub-facies.</td></tr>
</table>

Later Acheulian (~200-650 ka): General technology: bifaces more symmetrical and refined, cordiform, amygdaloid, ovate handaxes; some assemblages ovate dominates; greater use of soft hammer; increase use of Levallois technique, but some sites no Levallois; disappearance of core-choppers; often length of handaxes decreases; denticulates, notches, scrapers continue; few blades late contemporaneous with Final Acheulian; and during this time period prior technological modes may persist at some sites				
Bodo, Ethiopia (multi-methods) between **0.55±0.03** and **0.64±0.03 Ma** *(CJ1994)*; Acheulian, well-made handaxes, cleavers, *H. rhodesiensis* or *heidelbergensis;* skull cutmarks = 'intentional postmortem defleshing' *(WT1986)*	Berekhat Ram, Israel (Ar/Ar integrated age) **470±8** ka; artifacts near base of palaeosol between basalt flows *(FG1983)*, base paleomag. reversed, so may date earlier *(PN2002)*; first appearance of Levallois in Levant *(BO1994, 1998)*; female figurine, natural shape with artificial grooves *(GN1986,1995; MA1996, 1997, DF2000)*	Sadab, Hunsgi-Baichbal Valley, Karnataka, India (Th/U Elaphas molar) **290.4+21.0/-18.2 ka** (Szabo 1990) *(MS1992)* Teggihalli, Hunsgi-Baichbal Valley, Karnataka, India (Th/U Bos molar) **287.7+27.2/-22.4 ka** and (Elaphas molar) > **350 ka** (Szabo 1990) *(MS1992)*	Upper Irrawaddy Terraces, Myanmar (geol.) ~500 ka; only cores, flakes, proto-bifaces *(WJ1982)*	Nanjing, Tangshan Cave, China (Useries) >580 and probably ~620 ka *(ZJ2001);* Homo erectus // Europe, Africa, no tools *(LW2004)* Yunxian, Hubei, China (ESR mean age) 581±93 ka *(CT1996); Homo erectus* with features of *archaic Homo sapiens*; no tools *(TL1992)*
Olduvai Gorge, Tanzania Masek Beds, **~490-780 ka**; Later Acheulian, *H. erectus (TE1995; MS2000)*;		Maihar, Satna, Madhya Pradesh, India Flat centripetally flaked sandstone disc, ~70 mm diam., too soft to be a tool (JN Pal) // Bhimbetka Acheulian disc *(BR1992; BR1993)*	Tham Khuyen Cave, Long Son, northern Vietnam Units S1-S3 (Useries and ESR) **475±125 ka** *Homo erectus* (Cuong 1971, Kha & Cuong 1975) *(CR1996)*	Zhoukoudian Cave, Locality 1, China Layers 2-4 (TIMS U-series) **400-500 ka** *(SG2001; BN2004)*; cleavers, points, flake tools *(LJ1998)*; roasting of horseheads *(BL1986)*

Wonderwerk Cave, South Africa – 'Kathu Pan phase': (Useries) **~350 ka;** 2 ironstone slabs bearing engraved sub-parallel lines; abundant ochre fragments every level; exotic quartz crystals, small 'pretty' colored river pebbles (Beaumont 1990, 1999) *(BJ1992; BR2003; BR1993)*		Bhimbetka, near Narmada River, Raisen District, Madhya Pradesh (microerosion) Chief's Rock *cupule* **>100 ka** *(BR2005)* Later Acheulian layer underlies FA layer OSL preliminary dating 106±20 ka, hence Later Acheulian **>106±20 ka** *(BR2005)*; cupule and undulating groove petroglyph at Acheulian level; and chalcedony stone disc similar to Maihar (Kumar 1990) *(BR1992)*; Chief's Rock 9 cupules and marks of red pigment *(BR2005, KG1996)*	Cagayan River Basin, Luzon, Philippines (fauna) **~250 ka** (Coppens) *(PA2005)* only core-and-flake industry	Kommonmoru, North Korea (geobiostratig.) **400-600 ka**; picks, handaxes (BK)
Erfoud, eastern Morocco manuport cuttlefish fossil, probably natural (no evidence of working, but very weathered), has 'life-size shape of penis' (Fiedler, 1984) *(BR2002)*				
El Greifa E, Fezzan, Libya (Useries) ~ **200 ka** 3 fragments ostrich eggshell disc beads (Ziegert 1995) *(BR1997)*		Daraki-Chattan, Madhya Pradesh; Levels 3-6: exfoliated slabs bearing cupules, hammerstones for engraving; Level 6: hematite nodule; cave walls with 500+ cupules, 2 engraved grooves *(BR2005, KG1996)*		

Reconstructed LA Route 1: From Africa (~550-640 ka) through Southwest Asia (~470 ka) to western coast of India (~290 ka) apparently reaching China and Korea (~400-500 ka), unless we count sites such as Zhoukoudian and Kommonmoru as a convergent innovation, in which case the East Asian sites might be considered more advanced at least showing evidence of points prior to their appearance in Final Acheulian of Africa.

Reconstructed LA Route 2: Datings suggest a well-established Late Acheulian transsubcontinental Narmada Crossing route across South Asia was in effect around ~200 ka, through Gujarat (Umrethi, ~190 ka; Kaldevanhalli-I, Karnataka, ~170 ka), following the Narmada River through Madhya Pradesh (sites such as Bhimbetka; Daraki-Chattan; Hathnora *heidelbergensis* hominid site, ~200-300 ka; Maihar) towards its source, and crossing overland to rivers such as the Chambal, Betwa and Son (many sites around ~200-300 ka) down to the Ganges and thence eastward. As during the Middle Acheulian timeframe, and given sparse data, sites in SE Asia, such as Upper Irrawaddy, evidence only Developed Oldowan type industries. However, given the East Asian Later Acheulian sites, we may not positively posit a 'Movius Line' for this time period for Southeast Asia. Whether the East Asian sites reflect a convergent evolution from MA roots appears an open question.

Final Acheulian (~150-300 ka): General technology (African/SW Asia definition): multiple reduction strategies, Acheulian bifaces, sometimes made on Levallois flakes, Levallois and disc cores; variable presence of handaxes, cleavers as well as points, blades; termed 'Final Acheulian' or 'Intermediate' with regional variants; blades in African Kapthurin and Fauresmith and Levantine Mugharan Tradition				
Kapthurin Formation, Tugen Hills, Rift, Kenya Sites in or below upper basaltic tuffs of Bedded Tuff (lower K4) **>284±12 ka** and above Grey Tuff <509±9 *(DA2002)*; GnJh15: 74 pieces red ochre (>5 kg) pulverized and chunks, grindstones *(TC2006; MS2005; DA2002; MS2000)*	Tabun Cave, Mt. Carmel, Israel, Unit E XIII: Yabrudian (TL mean) **302±27 ka** XI: Acheulo-Yabrudian and Amudian (TL mean) **264±28 ka** *(MN2003, 1995,1994, BO199, VH1998)*	Bori, Kukdi River; Nevasa, Pravara Basin; Yedurwadi, Krishna Basin, Maharashtra each of 3 sites dated (Th/U) **~200K** (Korisettar 2002) *(BR2005)*	Tham Wiman Nakin Cave, northern Thailand (U-series capping layer) 130±18 to 169±15 ka (Esposito et al 1998) *(DF2004)*; no tools; '*Homo* between *H. erectus* and *H. sapiens*' *(TJ1998)*	Luonan Basin, China 50 open air sites with handaxes, cleavers, trihedral picks *(WS1998)*; (TL) 1st Terrace 182.8±9.1 ka; 2nd Terrace **251.05±12.5 ka** *(WS2005)*
Melka-Kontouré, Awash, Ethiopia Garba III: **~250 ka** Final Acheulian; remains 'earliest' *archaic Homo sapiens* (Hours 1979; Chavaillon et al. 1987) *(MJ2001)*		Bhimbetka, Madhya Pradesh III F-23-I (Misra Trench), FA/Intermediate Layer (EIP Project Preliminary OSL central) **106±20K** with 'Eastern Micoquian'-like bifaces *(BR2005)*		
Bir Tarfawi and Bir Sahara East, southwestern Egypt **250-320 ka** (OIS9) *(SB1995)*				
Blind River Mouth, South Africa -- Fauresmith FA large grindstone incised with checkerboard crisscross lines *(LP1933)*				

To condense space the following table lists additional **African** sites horizontally in descending chronological order, sometimes by geographic area.				
Sai Island, Nile River, northern Sudan Site 8-B-11 Levels 4-6: Sangoan (OSL) L5 and L6, between **182±20 ka** and **223±19 ka** L6: dense concentration of red and yellow ochre lumps, some with ground surfaces; sandstone slab, top pecked flat, grinding hollow, with 7 cupules; several chert pebbles with red/yellow ochre adhering, one with black inclusions, 'symbolic'; L5: stone circle with 2 more slabs with depressions *(VPP2003)*	Herto, Upper Herto Member, Ethiopia (Ar/Ar on underlying and overlying tuffs) **154±7-160±2 ka** *(CJ2003)* Latest securely dated (Final) Acheulian in Africa, later than Rooidam and Kaphturin *(MS2003)* *H. sapiens idaltu* between Bodo, Kabwe *rhodesiensis* and *Homo sapiens sapiens (WT2003)*; all 3 bear defleshing cutmarks and scrape marks, juvenile polishing (not processing for food), 'indicative of mortuary practice' *(CJ2003)*			
Reconstructed FA Route: This appears to be a wave from Africa (~285 ka) through Southwest Asia or perhaps originating there (~300 ka) that spreads to India, Gujarat and Maharashtra (~200 ka) and into the Narmada valley (at least by ~100 ka) and in China (~250 ka). Within limits of the database there is no evidence for Final Acheulian sites in Southeast Asia, although Thailand does show an *archaic Homo sapiens* (~130-170 ka). Apparently, we cannot posit a 'Movius Line' for this time period.				

EARLY-Middle Paleolithic (Middle Stone Age) (Africa ~150 to 300 ka): General technology (African /Southwest Asia definition): elongated or large, relatively thick, blades and point blanks flaked from radial, single or opposed platform cores, recurrent and some Levallois, with minimal preparation of striking platform; retouched points—many elongated, prismatic blades, endscrapers and burins common; no backed microliths; evidence of hafting points and blades (tangs, grooves, mastic); intra-regional point styles suggesting diverse cultural traditions; use of color pigments, extensive by Mid-MSA; *archaic Homo sapiens*				
Olorgesailie, Kenya Locality B, Olkesiteti Base (Ar/Ar) **340 ka** to Upper **220, 225 ka** Locality G, Olkesiteti 220, 226 ka *(BA 2005)*	Tabun Cave, Mt. Carmel, Israel – Unit IX = Layer D (TL mean) **256±26** ka *(MN2003)* but (ESR LU) 203±26 ka *(GR2000)*	16R Dune, Didwana, Thar Desert, Rajasthan (Th/U) **150±10 ka** and 144±12 ka; (TL) 163±21 from underlying level *(MS1992, JH2005)*	(repeats from previous chart) Tham Wiman Nakin Cave, northern Thailand 130±18 to 169±15 ka *(DF2004);* no tools; '*Homo* between *H. erectus* and *H. sapiens*' *(TJ1998)*	Zhoukoudian, China Locality 4 New Cave: (Useries) 120 ka; (possible min. age hominid) 248-269 ka; *archaic Homo sapiens;* Locality 15: direct percussion multi-directional and alternating flaking, disc cores, flakes, no Levallois *(SG2003)*
Florisbad, South Africa (ESR direct) *Homo helmei* **259±35 ka** Units N, O, P: (OSL) 281±73; 279±47 ka *(GR1996, RR1997, KK1999);* curved wooden implement with longitudinal // incisions on end (Volman 1984) *(BM2003; BRe2003; BR1992)*	Hayonim Cave, Israel Lower E (TL 5 flints) **~200 ka** *(VH1998);* Tabun D, several flints retained red ochre on retouched edge*(BO1995, 1997)*	Lakhmapur East and 189 other MP localities, Kaladgi Basin, Karnataka 'Early MP' industries' sites range **100 ka** to 50 ka *(PM2003)*	Tham Om Cave, Nghe An, central Vietnam 140-250 ka *(DF2005);* no tools; *Homo sapiens (DF2004)*	Dali, Shaanxi, China (Useries) **209±23 ka** (Chen et al 1994) (but association uncertain *BP2006*); *archaic Homo sapienc*; cores, flakes, scrapers (Wu 1981, 1989) *(KS1996; BP2006)*
Kapthurin Formation, Kenya Koimilot (Ar/Ar) **~200-250 ka** *(TC2006)*	Rosh Ein Mor (D15), Negev, Israel (U-series) **200+9.5/-8.7 ka** *(RW2003)*		Pajitan/Pacitan, Baksoka Valley, Java **~130 ka** *(BP1997)*	

Twin Rivers Kopje, Zambia (TIMS Useries) A-block: 'likely mean age' **~265 ka** F-block: **140-200 ka** *(BLP2002)*; Lupemban; A and F-blocks: 306 specularite, hematite, limonite, manganese dioxide pieces, some evident striations for powder; brown, red, yellow, pink, purple, blue-black; manganese and huge quantity suggest ritual use *(BLpig2002)*; pestle stone with hematite stain on working surface *(CJ2001)*			Kampung Gelok and Kampung Temelong, Bukit Jawa, Lenggong Valley, Perak, Malaysia MP tools **100 ka** *(VD2001)*	
Taramsa 1, Upper Egypt (Hill – Conc. 17): (OSL) **~210 ka** *(VVP1998)*			Arubo 1, Luzon, Philippines n.d., but horsehoof cores // Javanese Pajitanian dated ~130 ka and 'Australian Core-Tool and Scraper Tradition' plus Levallois points *(PA2005)*	
Border Cave, South Africa Strata 4-6 'MSA1' or 'Early MSA' (TL) **~165-180 ka** (ESR) ~80-227 ka **(OIS5-6)**; Ochre pieces ;OES beads *(BP1978; WI1999)*				
Omo Kibish, Ethiopia (Ar/Ar) **195±5K** *H. sapiens sapiens*				
Reconstructed EARLY-Middle Paleolithic (Middle Stone Age) Route: This appears to be a wave from Africa (~225-340 ka or ~280 ka) through Southwest Asia (~260 ka) that spreads to India (~150 ka), Southeast Asia (~130 ka). Although *archaic Homo sapiens* appears in China (~250 ka) and innovation of radial core multiple reduction strategies occurs at Zhoukoudian, apparently such methods were not used to produce points or blades—though this may reflect limits of my database or overall research—or might still be interpreted as a regional variant.				

<table>
<tr><td colspan="5">MID-Middle Paleolithic (Middle Stone Age) (~60-150 ka; OIS 5 = 74-130 ka; OIS 4 = 59-74 ka; African dry spell 60-20 ka): General technology (African, Southwest Asia): continuation of Early MP/MSA production of blanks by multiple reduction methods (single, double, multiple platforms, radial disc cores, Kombewa), sometimes ovoid and large flakes, regional variants of specialized prepared core techniques (e.g., Levallois, Nubian) and specialized point, blade or scraper styles (e.g., African Nazlet Khater, Aterian, Pre-Aurignacian, North African Mousterian, Ethiopian MSA, Kenya Rift MSA, Mumba Industry, Final Lupemban, Katanda MSA, Bambatan, Pietersburg, MSA-IV, Howiesons Poort, Stillbay; Levantine Nahr Ibrahim, Denticulate or 'Typical' Mousterian, Mousterian of Acheulian Tradition, Tabun C); Homo sapiens sapiens; increased frequency and variety of symbolic behavior, palaeoart, 'burials'</td></tr>
<tr><td>Omo, Kibish Formation, Ethiopia
(Ar/Ar; geostratig.) 195±5 ka (MI2005); early H. sapiens sapiens (earliest well-dated aMH) ; but tools not diagnostic (MI2005)</td><td rowspan="2">Tabun Cave, Mt. Carmel, Israel - Layer C – Units I-V 'Tabun C'
(TL) (Unit I) 165±16 to (Unit V) 222±27 ka (MN2003) but (U-series ESR)
(Unit I) 135+60/-30 to (Unit II) (EU) 133±13 ka (LU) 203±26 ka (GR2000)
[Note: TL dates make Layer C close to Layer D; so ESR more likely ~130-200 ka]</td><td>Patpara, Middle Son Valley
<103 ka (100-150 ka); blade, flake blade, scraper industry (JH2005)</td><td rowspan="2">Liang Bua Cave, Flores
Layer 9 'Pulse C':
(ESR+Useries) 74+14/-12 ka and other loci dated 74-95 ka; multi-method reduction, Kombewa flakes, points and blades; flakes reduced to cores, façonnage; Homo floresiensis (MM2007, MM2004)</td><td>Tongtianyan Cave, Guangxi, south China
(Useries) 61±1 to 68±1 ka or more likely ~111-139 ka; Liujiang hominid, H. sapiens sapiens (SG2002)</td></tr>
<tr><td>Mumba Shelter, Lake Eyasi, Tanzania – Level VIA, B 'MSA', Levallois; Homo sapiens sapiens (BG1988); (U-series) ~130 ka (MM1987; MS2000)</td><td>Samnapur, Narmada Valley, Madhya Pradesh
'MP'
Youngest Toba Ash
74±2 ka (Misra et al 1990) (JH2005)</td><td>Bailiandong Cave, China
(U-series on capping flowstone) ~<160 ka; H. sapiens sapiens (SG2002)</td></tr>
<tr><td>Buri Peninsula, Abdur Reef, Red Sea Coast, Eritrea
'Early MSA' with bifaces (TIMS U-series) 125±7 ka (WR2000) ['Mousterian of Acheulian Tradition'?]</td><td>Hayonim Cave, Israel
Upper E
(TL) ~150 ka (VH1998)
Tabun C industry</td><td>Baghor Formation, Son Valley
'MP'
Youngest Toba Ash
74±2 ka (RB2005)</td><td>Malakunanja II, Kakadu, Australia
Pit (TL) 52±11 ka
Base artifacts (TL) 61±13 (but base TL questioned) (RR1990; OJ2004); bipolar horsehoof cores, flakes, scrapers; ground hematite, red and yellow ochres, grindstone (RR1990; FJ1990)</td><td>Huanglong Cave, Yunxi, Hubei, China
(U-series, ESR, fauna) either 103±1.6 ka;
stone tools typical of south and north China [i.e., continues Early MP, scraper-based, no points or blades; 5 teeth, Homo. sapiens sapiens (WX2006)</td></tr>
<tr><td>Bir Tarfawi and Bir Sahara, Egypt
'Early Nubian'; (U-series, TL, AAR) ~100 to ~125 ka (VPP1998; SB1995; MN1999)</td><td rowspan="2">Skhul, Israel – Layer B
(TL) (B2) 119±18 ka (MN1994, MN1995, VH1998) and (ESR U-series) ~100 to 130 ka Tabun C (GR2005); burials (BA1992) H. sapiens sapiens with some archaic features; S5 burial with wild boar mandible; marine shells not related to food acquisition (BO1995), 2 shells are beads (VM2006)</td><td>Jetpur, Hiran Valley, Saurashtra, Gugarat
'MP with small choppers'
(Th/U) 56.8+5.4/-4.8 ka (above 2 layers MP tools) (JH2005)</td></tr>
<tr><td>Taramsa 1, Upper Egypt
Nubian points, Levallois flakes; (OSL) ~120 ka (VVP 1998)</td></tr>
</table>

Sai Island, northern Sudan Site 8-B-11 Upper Levels 1-3 Nubian, Levallois, radial reduction techniques **OIS 5** *(VPP2003)*	Qafzeh, Israel Layers XVII-XXIV (TL) range **85-102 ka**; isochron 92±5 ka *(MN1994, MN1995, VH1998)*; Tabun C; 18 MNI *Homo sapiens sapiens*; 3-7 burials, 1 with large fallow deer antler over hands over upper chest, *(BO1993; BA1992)*; or not burials, rockfall *(GR1999)*; min. 84 ochre pieces at every level, 6 worked, specific hues selected and manuported 40 km, % associated with burial loci and levels *(HE2003)* red ochre on working edges of some tools, 4 naturally perforated *Glycymeris* marine shells *(BO1993, 1995, VM2006)*; 1/3rd m. away from Q8 burial, broken Levallois core (recurrent centripetal flaking), triangular flat surface, 'plaquette', incised with mostly parallel stroke marks truncated by accidental break or intentional snap; grinding between two sets of lines and associated ochre fragment with scrape marks on both faces *(HE1997; HE2003)*		Nauwalabila I, Kakadu (OSL bracket dates for peak artifact density) **53±5.4** (290 cm.) **60.3±6.7 ka** *(RR1990)* but dates questioned *(BM2000; OJ2004)*; bipolar horsehoof cores, flakes, scrapers; '1 kg piece of hematite bearing ground facets and striations—clear signs of scraping to produce powder paint' *(FJ1990)*	
Nazlet Khater, Lower Nile, Egypt – Site NK2 Mousterian 'K' ('Denticulate or Typical Mousterian') (geostratig.) **~110 ka** *(VPP1998)*				
Aduma, Ardu Beds, Middle Awash, Ethiopia Levallois, micro-Levallois, micro-Aduma industry; grindstones (Ar/Ar, U-series, OSL) **80-100 ka** *(YJ2005)*				
Mumbwa Caves, central Zambia Basal MSA: **OIS5e** *(BLP2002; BL1995)*; 1 kg+ blocks of non-local hematite showing grinding or scraping; probably natural, anthropomorphic piece (Barham 2000) *(BR2003)*			Devil's Lair, SW Western Australia (OSL, ABOX) (calibr.) 50 ka, thus **<50** *(GR2002;TC2001)* or 'range **41-46 ka**' *(OJ2004)* flakes, small tools, possibly adzes for hafting; split pointed bones, bone points, resin on stone tools; bird bone pendant, 3 bone beads, 1 naturally perforated flat marl pebble with 4 wear grooves, possibly as pendant *(FJ1990; BR2003; BR1997)*	

Klasies River Mouth, South Africa (U-series, OSL, geostratig.) 'MSA I' OIS5e ~**111-130 ka** 'MSA II' **101±12 ka** *(GR2005; ES2005; SR1982; DH1989, 2001)* MSAII-a and II-b, 180 red ochre pieces, >50% with wear facets, incisions to remove powder, 14 from MSAI; 1 bone fragment with 4 thin // grooves, 2 with serrated edges; Cave 5: 1 hematized shale 'crayon' *(SR1982, DH2001; WI1999)*; MSA I, II, III *Homo sapiens sapiens (SR1982);* have cut and percussion marks and burning, indicates cannibalism *(WT1987; DH2001)*; or mortuary ritual	Nahr Ibrahim (Asfurieh) Cave, Lebanon (geostratig.) **80-92 ka**;Tabun C and Tabun B *(TI2000)* partial skeleton of fallow deer (*Dama m.*) 'burial' with red ochre; bones gathered in pile, some still articulated, unbroken, and skull cap placed on top, in association with flints, unusually large number just above the skeleton, pieces of red mag-ochre scattered in it *(SR1982, MA1990)*		Lake Mungo, Willandra Lakes, NSW Australia (OSL) between **43** and **45 ka** *(BJ2003; GR2006);* horsehoof cores, small flake tools typical of 'Australian Core Tool and Scraper Tradition' *(BJ1970; MJ1999)*; *Homo sapiens sapiens*: LM1 female, cremation, hearths, burnt animal (in situ kangaroo, wallaby, wombat, cat) and fish bones, emu egg fragments, mussel shells; LM3 male, ochre burial, no tools *(MJ1999, FJ1990; BJ1970)*	
Florisbad, South Africa Unit F: (ESR EU) **121±6** (OSL) 138±31 ka *(GR1996, RR1997, KK1999);* large ochre grinding slabs *(MS2000)*	Har Karkom, central Negev, Israel HK190a, 190b and several other sites: Mousterian of Acheulian Tradition *(AE2006)*; rhomboid with engraved circle 'navel' figurine, 2 other possible 'female' figurines, fluid-shaped 'pick'; triangular nuclei with 'vulva' and possible zoomorphs *(JBH, OriginsNet.org online)*		Huon Peninsula, Papua New Guinea (TL) ~**47 ka** (U-series between tephras ~44 and ~61 ka; walsted axes *(GL1986, OJ2004)*	
Apollo 11 Cave, Namibia Levels G G (AAR) **≥83 ka** *(MG1999)* Stillbay, 2 notched bone fragments, pigment *(WW 1974, WW1976)*			Carpenter's Gap, Kimberley, Western Australia (calibr. AMS) max. **44 ka** *(GR2002)*; Exfoliated fragment with red pigment painted on it in layer with ochre *(FJ1997)*	

Blombos Cave, South Africa M3: (OSL) **98.9±4.5 ka** (OIS5c 97-103 ka), provisionally 100-140 ka most utilized ochre of all levels M2: (TL) 76±7 and 105±9 (OSL) range **76.8±3.1 ka to 84.6±5.8 ka** (OIS5a high sea level 74-91 ka) 21 worked bone tools; some bone tools with evenly spaced incisions; MII (CF): 2 and MI: 39 *Nassarius* (tick) shell beads, perforated, with string wear M1: (TL) **74±5 ka** and **78±6 ka** (OIS5a 74-91 ka) Stillbay, 10+ bone tools; 1 mandibular fragment engraved with '11 subparallel lines and 1 obliquely crossing line'; 2 geometrically engraved ochre pieces (1 with tri-line over row Xs (BCC CD); 1 crosshatched (BCC CC), associated hearths; 8000 pieces of ochre, most worked by scraping and grinding, in all levels *(HC1997, HC2001, HC2002; DF2001, DF2005; SM2004; HC2004)* dating *(JZ2006; TC2006)*	Wadi Arah, Bir Khasfa, southern Oman Mousterian of Acheulian Tradition *(RJI2004b)* Har Karkom, Negev, Israel – HK148b Aterian, hut floor *(AE2006)*; (North and Northeast Africa dated **OIS5 74-130 ka** or earlier); around inside perimeter of hutfloor zoomorphic, anthropomorphic and geometric figurines *(JBH, OriginsNet.org online)* Bani Khatmah, Rub' al-Khali, Saudi Arabia Aterian *(PM2004; BA2006)*			

To condense space the following table lists additional **African** sites horizontally in descending chronological order, sometimes by geographic area.				
Pomongwe Cave, Matopos Hills, Zimbabwe (14C) >42 ka; probably **125 ka** (Klein 1978) *(BRe2003)* Layers 22-27: Proto-Stillbay ochre from all spits Layers 13-21: Bambata Stillbay, increased ochre and stained lithics; *(CJ1965, CJ1982; WI1999);* 'MSA levels': 2 granite slabs stained with ochre *(BA2000, BRe2003; BR1992)*	Hollow Rock Shelter, South Africa Stillbay, >1000 pieces pigment, 45% use wear by weight, *(WI1999);* 2 incised and notched (serrated) ochre fragments *(MS2000)*	Bambata Cave, Zimbabwe probably **125 ka** (Klein 1978) *(BRe2003)*; Stillbay, evidence of ochre use *(BRe2003)*	Olieboompoort, Transvaal, South Africa 'MSAII': 304 pigment pieces, mostly specularite, 'crayons', 11.95 kg, 18.2% modified by weight, 1 of 5 grindstones with ochre stain (WI1999)	Porc Epic Cave, Dire Dawa, Ethiopia 'Late MSA'[=late Mid-MSA] (obsidian hydration) occupied **61 to 77.5 ka** *(CJ1984)*, *H. helmei (MS2000)*; 298 fragments of ochre, at least 40 with clear wear facets from grinding (CJ1984; Clark 1988) *(MS2000; BR1992)*
Border Cave, South Africa Stratum 3 (AAR) bracketed >56 <100 ka (ESR) **58±2 to 76±4 ka** *(GR2001; MG1999)*; 'MSA2' = Howiesons Poort BC3 infant skeleton, stained by red ochre, with perforated *Conus* shell in 'shallow grave'; higher level, *Conus* manuported 80 km *(GR2001; MS2000)*; ochre, 27.7% wear facets by weight *(WI1999)*	Klasies River Mouth, South Africa Howiesons Poort, 102 utilized ochre pieces *(SR1982)* ~**70 ka** *(WS1999)*	Apollo 11 Cave, Namibia Level F (AAR) **63±6** and **69±7,** Howiesons Poort, 3 ostrich eggshell fragments with incised crisscross lines; pigments; 2 notched bones *(WW 1974, WW1976)*	Cave of Hearths, South Africa - Bed 9 Howiesons Poort. broken circular ostrich eggshell pendant, 3 cm diameter, central perforation) *(MS2000)*	Howiesons Poort, South Africa – H.P Level 1 hematite fragment, ground trihedral base with 18 (3, 11, 4) notches along its edges; 1 bone point *(SP1928)*
Boomplaas Cave, South Africa – Level OCH OCH: Howiesons Poort (U-series, AAR) ~**60-70 ka** *(VJ2001)*; ochre pieces *(WI1999)*	Diepkloof Shelter, South Africa – H.P. Level (TL) **71±8 ka** *(VH2005)*; 2 ostrich eggshell fragments engraved with subparallel lines *(MS2000)*	Rose Cottage Cave, South Africa 'MSA II' : (TL mean) 70.5±5 'HP' (TL) between 56.3±4.5 and 60.4±4.6 ka; (OSL) 66±4 ka *(VH2005);* pigment pieces all levels *(WI1999)*	≠Gi, Botswana (TL, AAR) **70-80 ka** or 77 ka 'Bambatan', highly retouched, broad foliate and triangular points; points highly curated; grindstones stained with ochre *(KK1989; MS2000)*	Die Kelders Cave, South Africa 'Late MSA', blades (OSL) **60-70 ka** *(FJ2000)* (ESR) **70±4 ka** *(SH2000)* *H. sapiens sapiens*; ochre stained grindstones *(MS2000)*

To condense space the following table lists additional **African** sites horizontally in descending chronological order, sometimes by geographic area.				
Rhino Cave, Tsodilo Hills, Botswana (tool style) analogous to MSA ≠Gi ~77 ka (other Tsodilo Hills sites dated 64 ka and 96 ka) *(S. Coulson, interviews on line)*; MSA: specularite mining, hammerstone, grindstones; 'ritual deposition' of finely made quartz and rock crystal, polished points, those with red color burnt white; rock wall of cupules and abraded grooves, engravers in MSA level, 'image of python' *(S. Coulson interviews on line)*		Windhoek, Namibia n.d., 'earliest' MSA, in pile 1.3 m in diameter, 75 cm high, 36 spheroids, (35 of 'fine crystalline quartz', 1 of 'red sandstone') each weighting 600-1200 g; mostly 8-10 cm. diam; all have notch, 1.5 cm diam. and 'few' mm deep *(FG1954)*	El Guettar, Tunisia 'Mousterian with foliates, tanged points' '// Tabun C' *(GM1954)*; (14C) 47±4, 57±7 ka *(AN2006)* but moist phase fauna, Libyan, East Sahara wet phases = **65-90 ka** and 120-155 ka *(SB1995)*; in spring, pile 60 spheroids, 1 tanged point in base center of pile, elongated points near top, apex spheroid white cortex, flaked black one pole, red ochre other pole; triangle and lozenge plaques at base *(GM1954)*	Dar-es-Soltan I and II, Morocco Aterian, *H. sapiens sapiens*; 'enigmatic heap of sandstone slabs 1 m diameter, 30 cm high' *(MS2000)*; (AAR) **60-70 ka** *(RJ2004)* or Libyan Aterian 60-90 ka *(MS2000)*
Oued Djebanna, Algeria Aterian, perforated shell of *Arcularia gibbonsula* (Morel 1974) *(MS2000)*	Taforalt Cave, Algeria Aterian, perforated marine shells from ~35km away; *(Nick Barton, online)*	Seggédim, eastern Niger Aterian, 4 drilled quartzite flakes, probable pendants *(MS2000)*	Grotte Zouhra, Morocco Aterian, bone pendant *(MS2000)*	
Reconstructed MID-Middle Paleolithic (Middle Stone Age) Route: This appears to be a wave (or waves) possibly originating in Africa (~195 Omo Kibish or ~130 Mumba Shelter) or Southwest Asia (~150-160 ka) especially if early Tabun Cave C ESR dates (~130-200 ka) are accepted. Mid-MP subsequently occurs in India (~100 ka), Southeast Asia (~75 ka) and Australia (~55 ka). *Homo sapiens sapiens* seems to occur in China (~150 ka) but apparently continues using an Early MP stone technology during the Mid-MP time period.				

LATE-Middle Paleolithic (Middle Stone Age) (~30/35 to 60 (100) ka; OIS3 = 24-59 ka; African dry spell 20-60 ka): General technology: (African) continuous Levallois for production of blades as in UP and thin flakes, light-duty flake tools, or single, double platform or radial cores for flakes and blades; high % denticulates; notches, Tayac point, end- and sidescrapers; but no LSA geometrics; no backed pieces like Howiesons Poort and no bifacial points like Stillbay *(KR2004)*; (Levant Tabun B) return to triangular blanks, removed from mainly unipolar convergent Levallois cores, broad-based Levallois points; short thin flakes and some blades; also radially prepared cores in upper contexts of Tabun B *(BO1995)*				
Taramsa 1, Qena, Upper Egypt (Conc. 28): ~30-65 ka (OSL mean) **55.5±3.7 ka**; Levallois flakes, blades, // Boker Tachtit, Negev; *H. sapiens sapiens*, intentional burial *(VPP1998)*	Tabun Cave, Mt. Carmel, Israel – Layer B (Combined Useries/ESR) **104+33/-14 ka** *(GR2000)*; Tabun B *(BO1992)*; probable *Neanderthal (CA2005)*	Attirampakkam sites, Tamil Nadu, India Layer 2 (ESR) **45-50 ka** *(BB2005, PSG2003, PS2003)*; 'Late MP/UP' with knives, points; rare handaxes and cleavers *(PS2001)*	Ngarrabullgan Cave, Queensland, Australia (calibr. AMS) Level 3: **36±2 ka** *(GR2002)*; processing starchy grains and fibers; resin hafted woodworking; possible skin-working *(FR1997)*	Ryonggok Cave, North Korea (Useries) **46-48 ka** *(NC2000)*; 5 H. sapiens, 1450 to 1650cc so not *H. erectus* as thought *(BK1992) = early H. sapiens sapiens* [=similar cc to Skhul-Qafzeh]
Sodmein Cave, eastern desert, Egypt MP2: (14C) >30ka, Emireh points UP2: (14C) 25.2±0.5 *(MN1999)*	Kebara Cave, Mt. Carmel, Israel – F (TL) occupations from **48.3±3.5 ka to 61.6±3.6 ka** *(MN1994, VH1998) Homo neanderthalis(BO1992,1993)* 1 bone engraved with / and V marks *(DS1974)* [at ~**57 ka**]	Bhimbetka III F-23, Madhya Pradesh, India - Layers 4-5 (EIP Preliminary OSL) **45±8 ka** *(BR2005)*; 'Middle to late phase of MP' with blade and flake-blade cores, blades, knives, burins *(JH2005)*	Sandy Creek I, Cape York, Australia Lower occupations (14C calibr.) **34.4 ka**; some even lower flakes and red pigment; clear or milky quartz, split pebble core reduction, 1 ground-edge axe, waisted and grooved, 11 pieces red pigment;*(MJ1995; FJ1997)*; cupules on wall *(BR2006)*	Myoungo-ri, Nam Han River, South Korea (est.) ~40-50 ka; 'Late MP' bifaces, choppers, picks, scrapers, points, denticulates, knives, notches *(BK1992)*
Khor Musa, Sudan - 34A, 34D: (redated 14C) **>40 ka**, possibly 60 ka *(MS2000)*; 'Khormusan MP' blade-and-burin industry, grindstones, few polished bone tools *(VPP1998; BA2006)*	Biqat Quneitra, Israel (ESR) **39.2±4.2** to **53.9±5.9** *(MA1996, TI2000)*; flint with cortex incised with 4 nested semicircles and diagonal lines *(MA1996)*	Kalpi, Yamuna Valley, Ganga Plains, Uttar Pradesh, India (TL) ~**45 ka**; 'MP with choppers' *(CP2006)*		Hongsu Cave, South Korea ~40 ka; child, *H. sapiens sapiens (NC2000)*
Jebel Gharbi, northwestern Libya **40-80 ka**; Aterian at spring sites to escape drier areas of North Africa *(GE2006)*	Amud, Israel – B1, B2 (TL) ~**56-57 ka**; 14 MNI, 3 *H. neanderthalis(TI1988, VH1998)*; A7 infant in niche, 'burial' with red deer maxilla (Hovers et al 1995) or 'exposed' *(GR1999)*	Mula Dam, Maharashtra (14C) 31.98+5.72/-3.34; 'MP' *(BR2005)*		Pyeongchang-ri & Juwol-ri, Imjin-Hantan, South Korea (overAT) **>29.4±1.9 ka;** Late MP (contemp. with UP), choppers, handaxes, picks, notches, denticulates, backed knives, trapezoids, 'pseudo-prismatic cores', points, scrapers, and awls *(SC2004)*

Mumba Shelter, Lake Eyasi, Tanzania Mumba industry, backed geometrics // H.P. (Useries) 46.6 ka, 65.7 ka (AAR) 45-65 ka *(BG1988; AS1998; WR2000)*; eggshell beads (AAR direct) **52 ka** *(MS2000)*	Har Karkom, central Negev, Israel -- HK19: 6 hut floors, 'Levallois Mousterian' flints *(AE2006)* [// Tabun B dating?]; 3 zoomorphic flints at east entry to one hut, 2 'equid heads' *(JBH, OriginsNet.org online)*	Upper Son Valley, India 'MP with tanged points' *(JH2005)*	Mandu Mandu Creek Shelter, Pilbara, Western Australia (AMS between) **30.9±0.8** to **35.2±1 ka;** 22 perforated *Conus sp.* shells and modified fragments *(MK1993)*	
Matupi Cave, DR Congo (14C) >40.7 ka *(BA1995)*; LSA microlithic cores but lacks microblade cores, thus MSA *(MS2000)*	Dederiyeh Cave, Syria (TL) Layers 2-4 **50-70 ka** Layers 8-9 **60-90 ka** *(GC2004)*; 15 MNI *H. neanderthalis*; Layer 8: infant, slab top of head, triangular flint at heart, 'intentional burial' *(AT1995, ATM1995)*; or death by fall into cave *(GR1999)*		Sandy Creek II, Cape York, Australia Lower (AMS over pigment layer on rock wall) (calibr.) **~27 ka**; *(CN1995)*; bipolar, single platform cores; flakes, blades, ground-edge axe fragment; pigment utilized *(MJ1995)*	
Loiyangalani, Tanzania (n.d.); MSA, 2 OES beads, ochre pencils, bone artifacts *(TJ2004)*				
Border Cave, South Africa Stratum 2: 'MSA 3', (ESR) lower 41±2 ka; upper 63±2 ka *(GR2001)*; rib fragment with 12 notches along edge *(BR1992)*; ochre pieces *(BP1978; WI1999)*	Geula B Cave, Mt. Carmel, Israel B1: (14C) **42±1.7 ka**; early H. sapien sapiens; Tabun B; ochre *(BA2002)*		Woodstock 65B, Pilbara, Western Australia (microwane analysis on 2 circle petroglyphs) range **~16 to ~38 ka;** petroglyphs: circles, anthropomorphs *(BR2001)*	
Apollo 11 Cave, Namibia Level E (AAR) **59±6 ka** *(MG1999)*; 'Late MSA/LSA', blades, gum mastic on blade, 6 painted slabs (1 'feline with human legs'; 1 'zebra' or 'giraffe'; 1 'antelope'; 1 'rhino'; 2 with minimal markings, indeterminate image), 1'painted pebble' *(WW 1974, WW1976)*	Shanidar, Iraq 9 *H. neanderthalis*; S1: (14C) 46.9±1.5 ka; S5: (14C) 50.6±3 ka *(SY1988)*; S1 crippled, amputated arm = *altruistic behavior*; S4 niche 'flower burial'; S6 S7 S8 'secondary burial' *(SR1971)* but contra *(SJ1999)*; S1 and S5, cranial deformation *(TE1983)*		Mushroom Rock West, Cape York, Australia Lower (TL) **28.7±3.5 ka; 26.7±4 k**; (14C ~15? ka); bipolar, single and multi-platform cores, flakes, blades, core tools, ground-edge tools; used pigment for painting; cupules on buried slab unprovenanced, but also on shelf *(MJc1995; MJa1995)*	

Sibudu Cave, KwaZulu-Natal, South Africa 'Late MSA' (OSL) occupations from **53.4±3.2 ka** to **60.8±2.3 ka;** 'Final MSA' (OSL) **26.0±0.42 ka to 35.2±1.8 ka** *(WL2004)*;); Late MSA: 3 notched bones: 1 with 10 or 11 equally spaced // notches; residue plant fiber, cells and starch grains (but direct AMS 28.88±0.17) and 1 fragment w/1 notch; Final MSA: 1 with series of 3 flaked notches on edge;1 bone pin *(CC2006; CC2004)*			New Guinea II, Snowy River, Australia Unit 4, core, scrapers, bone points (14C) **21+0.9/-0.8 ka** reoccupied **~13-16 ka**; digital fluting, diagonal crossing lines, circles // Koonalda style *(OP1995, FJ1997, FJ1990)* Kow Swamp, southern Australia (OSL) **~19-22 ka**; *H. sapiens archaic* (Rhys Jones); grave goods: ochre, shells, marsupial teeth, cranial deformation? *(FJ1990)*	
Ysterfontein 1 Shelter, South Africa (AMS) **~46-57 ka**; Late MSA, red ochre and black manganese pieces, 1 of each color striated, diorites with ochre rubbing or grinding smears, maybe for hafting or for art *(KR2004)*			Koonalda Cave, Nullarbor Plain, Australia (14C calibr.) **16-27 ka** *(GR2002)*; 'MP' flint quarry; Extensive digital fluting meanders, crisscross lines, lattices, herringbone; Squeeze entrance: SW side 2 sets of 4concentric circles; lattice grids above entry *(WR1971)*; standing stones & stones with zoomorphic and anthropomorphic shape (Gallus) Pre-Panaramitee tradition *(FJ1997)*	
Rose Cottage Cave, South Africa MSAIII: (TL) **50.5±4.6 ka;** points, knives, scrapers, backed tools; Late MSA: **27.7-30.8 ka;** *(VH2005)* pigment pieces all levels*(WI1999)*				

Boomplaas Cave, South Africa- MSA III Levels (14C, Useries, AAR) **~20-45 ka** *(MG1999)*; pigment all levels *(WI1999)*; OLP (~35-45 ka) 1 complete and 1 unfinished ostrich eggshell bead *(DF2005)*			Kalate Egeanda Cave, Papua (comparison other sites) possibly ~15-20 ka; digital fluting petroglyphs *(FJ1997)*	
Nswatugi, Zimbabwe (14C) infinite >40 ka; Late MSA 'Tshangulan', beads; 3 granite slabs with 1 definite, 2 probable ochre stains *(MS2000; BR1992)*			Lake Nitchie, NSW, Australia (14C) **6.5-7.0 ka;** 'robust' or *archaic H. sapiens*; burial: ochre pellets, necklace of 178 pierced Tasmanian devil teeth (from MNI 47), missing 2 central upper incisors // male initiation rite (FJ1983)	
To condense space the following table lists additional Late MSA **African** sites horizontally in descending chronological order, sometimes by geographic area.				
Zombepata Cave, Zimbabwe (14C) infinite, **>40 ka**; MSA, 2 stone rings of micaceous schist, ornamental *(DF2005)* [industry unclear]	Lion's Cavern, South Africa (14C) **10 ka to 43 ka** or infinite >40 ka; ochre mine *(MS2000)*	Umhlatuzana, South Africa (date?) Final MSA, pigment pieces (WI1999)	Bushman Rock Shelter, South Africa (date?) MSA, OES beads *(DF2005)* [industry?]	
Reconstructed LATE-Middle Paleolithic (Middle Stone Age) 'Route': Seems earliest in Southwest Asia (~70/100 ka), or possibly later if the Tabun Cave B dates are too high, and if so at least ~60 ka, and in Africa (~55 ka), India (~45-50 ka), Southeast Asia (~30 ka). China (~40-50 ka) and Australia (~30-35 ka). Most probably these are all local developments, more or less convergent.				

<table>
<tr><td colspan="5">Early, Middle and Late Upper Paleolithic/Early, Middle and Late Later Stone Age (~5-60 ka; African dry spell 20-60 ka): General UP: retouched blades and bladelets, scrapers on blades, small and microlithic tools; bone tools, soft hammer, more art; (Africa): microblade cores; often but not always backed bladelets; endscrapers, distinctive burins (CJ1970; MS2000); probable first hafted projectile points after 40 ka, but not during MSA (SJ2006); (Southwest Asia): EUP single platform reduction strategy for blade blanks, slender elongated interior blades, for El Wad points and retouched blade and bladelet blanks, dominated by endscrapers, burins, truncations, some sites continue Levallois blanks, endscrapers, denticulates; MUP and LUP differentiation into distinct reduction strategies for blades versus bladelets; (India): blade-based; prismatic cores, scrapers, increase of burins and backed blades, microlithic, bifacial and tanged points, but standardization of retouched forms not comparable to Aurignacian or other UP Europe; ostrich eggshell in over 40 sites dating 25-40 ka (BR2003); (East Asia): retouched points, blades, bladelets, small and microlithic tools; bone tools, soft hammer, more art</td></tr>
<tr><td>White Paintings Rock Shelter, Tsodilo, Botswana
'MSA/LSA': (OSL) 55.4±4.7 ka (RR1997) or 38-50 ka (MS2000)

Olduvai Gorge, Naisiusiu Beds, Tanzania
(ESR) 60±10 ka; (AMS 14C) > 42 ka; Early LSA Lemuta industry (AS2002)</td><td>Boker Tachtit, Negev, Israel
Level 2: (14C) >45.49, 46.93±2.42, 47.28±9 ka; EUP, opposed platform Levallois-point, quasi-discoidal, single- and opposed-platform blade reduction (MA1983);
'Bohunician Behavioral Package' dispersal to central Europe, Siberia (TG2003)</td><td>Site 55, Pakistan
~45 ka; UP, flake blades, microblades
(CP2006, JH2005)</td><td>Malangine Cave and Koongine Cave, South Australia
(Useries over Karake at Malangine Cave) ~28 ka
3 superimposed petroglyph styles:
I: Digital fluting
II: Karake Style: CLMs, 'x tracks' (minimum 28 ka)
III: Circles, lattice (BR1999)</td><td>Shiyu, Shanxi, China
Upper (14C) 28.135±0.37 ka
Lower (14C) 32.220±0.625
(BR1991); 'combine MP and UP features'; perforated stone disc (BR1991; BR1994)</td></tr>
<tr><td rowspan="2">Enkapune ya Muto Shelter (GtJi12), Kenya
MSA/LSA Endingi industry > 50 ka; ochre on 2 flakes, stained grindstone;
LSA Nasampolai industry, ~40-50 ka; ochre on back of several backed blades suggests hafting;
LSA Sakutiek industry (14C) 39.9±1.6 or ~37-40 ka; ostrich eggshell, 13 beads, 12 perforated preforms, 593 shell fragments (MS2000; AS2002; AS1998)</td><td>Ksar Akil, Lebanon
(14C XXVI underlying EUP) 43.75±1.5 ka (MA1983); (est.) ~ 50 ka (KS1999); EUP Levallois blades UP retouch; XXIII ('unique, maybe intrusive') 1 bone awl incised 14 cutmarks in 7 pairs (NM1974, CL1977); perforated shell beads (KS2001)</td><td>Chandresal, Kota, Chambal Valley, Rajasthan, India
(14C) Lower 38.9±0.7 ka
Upper 36.55±0.5; UP, blades, small and tanged points, scrapers, burins, lunates; ostrich eggshell beads and fragments, 1 engraved (KG1988)</td><td>Karlie-ngoinpool Cave, South Australia 3 styles in sequence
I: Digital fluting (possibly pits and grooves)
II: Karake; circle, barred, concentric circles, CLMs of 2-5 lines; !maze, dots, parallel stroke marks; arcs, !stars, multiple wavy lines, xtracks, enclosures
III: shallow lines (FJ1997)</td><td>Suyanggae, Nam Han River, South Korea
'Early UP': end and side scrapers on blades (BK1992);
Layer IV: (14C) 16.4 to 18 ka tanged points, microblades (LY2000)</td></tr>
<tr><td>Kebara Cave, Mt. Carmel, Israel, E -Units I-IV
E -IV (AMS) 42.5±1.8 ka; EUP, blades, endscrapers;
E I-IV 28-42 ka; EII: few lumps of ochre (BO1992)</td><td>Bhimbetka III A-28, Raisen District, Madhya Predesh
UP level: 2 ostrich eggshell tablet beads; found at neck of burial H. sapiens sapiens (KG1988; BR2003)</td><td></td><td>Hinatabayashi B, Nagano, Japan
30 ka; UP ground and polished tools (Tokyo National Museum online)</td></tr>
</table>

Mumba Shelter, Lake Eyasi, Tanzania - Level III 'well before 40 ka' or **30 to >37 ka**; LSA, ostrich eggshell beads *(MS2000)*	Üçagizli Cave and Kanal, south central Turkey G-I: EUP; H: (AMS calibr) **~41-44 ka**; E-F: transitional; Layers B1-B4 (14C) 29-32 ka (uncalibr); 'Stage 2 UP'; *(KS1999, KS2001)*; perforated shell beads (all levels except D), perforated predatory bird phalanx *(KS 2001, VM2006)*	Nagda, Ujjain and Ramnagar, Mandasor, Chambal Basin, Madhya Pradesh, India EUP Level (14C) > **31 ka**; Nagda: 1 ostrich eggshell disc, 35 mm diam., smoothed margin; Ramnagar: 5 engraved eggshell fragments *(KG1988; BRm1992)*	Leang Burung 2, Maros, South Sulawesi Layers II-V (14C) **~22-31 ka;** Bipolar, bifacial disc cores, 1 blade core, minor use of Levallois, scrapers, knives, blades, with phytolith edge gloss, perhaps for basketry or matting; hematite fragments all levels, 3 abraded (1 ochre pellet with cross-cutting striation, as if used for pigment) *(GI1981; OJ2004)*	Zhoukoudian, China Upper Cave 101, 102, 103 (AMS) suggests **~24-29 ka** (though 14C ~10-18 ka) *(BP2006)*; UP tools, flakes, some scrapers, knives; 1 bone needle, polished antler; ~10 MNI *H. sapiens sapiens (CD2003; WJ1982)*; hematite lumps; ochre in burials, 1 elderly burial with perforated shell and fox canine; total 141 ornaments, some with traces of red ochre (125 perforated deer, fox teeth, 3 perforated shells, 1 perforated ovoid pebble, 1 perforated fish supra-orbital, 7 perforated stone beads, 4 tubular bone sections with // cut marks) typical of UP Europe and Siberia *(BR1991; UNESCO Peking Man website)*
Border Cave, South Africa Stratum 1: (AMS, ESR) **36±1 and 39±3 ka** *(GR2001; MG1999)*; Early LSA, ostrich eggshell beads; incised notched bone *(AS2002; MS2000)*	Har Karkom, Negev, Israel At least 16 sites, 'Karkomian –EUP/MP transitional', Levallois large blades, backed blades, points, endscrapers; HK86b: 'Paleolithic sanctuary': spiral circle of standing stones with natural anthropomorphic shapes, smaller zoomorphic and anthropomorphic (Z-A) stone figurines with retouch; HK86a, HK87b: stone heaps associated with hutfloors; HK203a: pebble drawings or geoglyphs; HK210: 53 Z-A stones; some on perimeter of hut floor, 1 in its floor; between other 2 huts a small circle of Z-A stones with 1 round, mask-shaped in the center *(AE2006, AE2001, AE1996, AE1993)*	Fa Hien Cave, Sri Lanka **31 ka**; *H. sapiens sapiens;* geometric microliths; *(JH2005)*	Mushroom Rock West, Cape York, Australia Middle: (TL) **20.7±3 ka** to **9.5±1.9 ka** (14C) 7.7 ka or ~10-15 ka; bipolar, single and multi-platform cores, blade and burin cores, flakes, blades, core tools, scrapers, adze; used pigment for painting *(MJc1995; MJa1995)*	
Nazlet Khater, Upper Egypt NK4: (OSL) **38-45 ka**; Early UP chert mine NK2 (UP Level): (14C) **37 ka;** burial with bifacial axe, facing east, grave covered with blocks, 2nd burial with fetus bones and ostrich eggshell fragments; *H. s. s.*, 1400cc, with some African MSA archaic features *(PRS2000, VP1984, VP2003; RB1992)*		Batadomba-lena, Sri Lanka **28.5 ka**; *H. sapiens sapiens*; geometric microliths, bone points, ostrich eggshell beads *(JH2005)*	Sandy Creek II, Cape York, Australia (AMS over superimposed hematite pigment layers on rock wall) (calibr.) **15-16 ka**; (calibr.) **7.499 k** *(CN1995)*; (14C, TL) Lower Middle: **~12 to ~15** Upper Middle: **~7.7 to ~10**; bipolar, single platform cores; flakes, blades, ground-edge axe fragment; pigment utilized *(MJ1995)*	Sokchang-ni, Kum River, South Korea (14C) **20.83±1.88 ka**; Layer 12: blade cores, end scrapers on blades, side scrapers, burins, becs, points; microcores // Aurignacian *(BK1992)*

Nturnot, Ntuka River, Kenya (GvJh11): 8 Upper: LSA with microblades, microcores (horizon just above horizon dated (14C) **30 ka** (AAR) **32 ka** ***(AS2002)***	Qafzeh, Israel – Level VII-IX or D, E Early Ahmarian *(CG1989)*, D: Stage 2 UP; E: Stage 1 UP; limestone slab and hand stone smeared with red ochre *(BO1997)*	Patne, Maharashtra, India Levels 5-7 (14C) **25.5±0.2 ka** Late UP: prismatic blade cores for blades, microlithic blade and bladelets, geometric lunates and triangles *(JH2005)*; 3 ostrich eggshell beads (1 perforated, 1 centrally scored, 1 disc) and eggshell fragments, 1 fragment engraved with Xs in // lines *(BR1997; BR2003; KG1988)*	Sandy Creek I, Cape York, Australia Middle occupations ~18 ka to ~9 ka; layer containing exfoliated engraving (14C at 162 cm.) 12.62±0.27 (calibr.) **14.4 ka;** 14 pieces red pigment; partially buried panel: 'pecked lines, curves, bird tracks'; exfoliated pecked engraving confirms panel dating; = regional variant of Panaramitee tradition *(MJ1995, FJ1997)*	Mandal-ni, Sangmaryong River, Hwachon, North Korea (fauna) 20 ka; UP: 7 microblade cores (6 obsidian, 1 quartzite); bone tools, mostly points; *Homo sapiens sapiens (BK1992)*
Kisese II Rock Shelter, Tanzania 'MSA/LSA': (14C) **31.48 k**; ostrich eggshell beads ochre crayons with wear facets *(DF2005; RB1992)*				
White Paintings Rock Shelter, Tsodilo, Botswana LSA (14C, AAR) **33 and 37 ka**; (AMS direct) **26 ka;** bone harpoons and other bone tools, ostrich eggshell fragments, preforms, beads *(MS2000)*	Abu Noshra II, southern Sinai, Egypt (14C) **38-39 ka** *(KS1999, GI1999)*; Lagaman EUP, 1 bone point *(GI1999)*	Khaparkheda, Narmada Valley, India UP level: Ostrich eggshell beads manufacturing factory site *(KG2001)*	Early Man Shelter, Cape York, Australia (14C calibr.) **14.4 ka**; buried engraved frieze: 'cupules, xbird tracks, !tridents, circles, mazes'; 1 buried engraved slab, 'xbird track' (calibr.) **4.536 ka;** 'typical of petroglyphs 5 ka to present' *(CN1995)*	Longgu Cave, Xinglong, Hebei, China (AMS) **13.065±0.27 ka**; Cervus elaphas *antler engraved with multiple // and wavy lines, figure 8 motif, and zigzag, oblique crosshatch and horizontal // lines; noniconic art = in sophistication to Siberia, Russia, Europe* (BR1991; BR1994)
Apollo 11 Cave, Namibia D: (14C) **12.5 to 19.8 ka**, ELSA, 'OES beads and containers, seashells, pigments and minerals' C: (14C) **6.2 to 10.4 ka**, LSA 'Wilton', 'OES engraved fragments & beads, pendants of OES and seashells, OES containers, pigments and minerals' *(WW1976; MG1999)*	Qadesh Barnea, northeast Sinai, Egypt - sites QB9, QB501, QB601 (14C) **32-34 ka** *(GI1993)*; Lagaman EUP, QB601: ochre extensively used, ostrich eggshell,; 5 *Dentalium* shell pieces; QB9: 1 limestone scraper with // incised lines on dorsal face *(GI1999)*	Inamgaon, Maharashtra **~21-25 ka**; blades, points, fluted cores, rare backed blades *(JH2005)*	Song Terus, Southern Java ~10 ka; burial, mandible *Homo sapiens sapiens (LA2004)*	
		Chandrawati, Rajasthan UP level: fluted core bearing pre-fluting spiral rhomboid design *(KG2001)*	Sturts Meadows, NSW (14C on carbonate overlying varnish) thus > **10.25±0.17, 10.41±0.17 ka**; Panaramitee style rock art *(FJ1997)*	

Mumbwa Caves, Zambia (date?) MSA/LSA Transition and LSA, ground bone points, drilled bone fragments, 1 decorated bird bone, beveled end, 2 pair notches on one surface, 1 pair obverse, with traces of hematite *(BLP2002; BL1995)*	Lagama, Sinai, Egypt VII (14C - corrected) range **30-34 ka**; Lagaman, X: 82 pieces of Dentalium shell, and few shells other levels;)flint artifacts stained with red ochre *(BO1997; GI1999; CG1989)* Boker BE, Negev, Israel III: (14C) **26-27.5 ka;** Late Lagaman UP, basalt grinders for ochre *(GI1999)*	Baghor I, Son Valley UP/Epipaleolithic level **~8 to 9 ka** *(KJ1983)*; backed, truncated and serrated blades, scalene triangles and trapezes *(MV2005);* in center of circle of sandstone rocks, female anthropomorphic stone with concentric triangles in base// similar stones in rock circle<1 mi. away in current use representing Mai, the Mother Goddess *(KJ1983)*	Panaramitee North, Olary, South Australia (date?); type site for Panaramitee style: pit, groove, circle, arc, track (macrcopod and bird), star, maze, parallel strokes, vulva, human footprint *(FJ1997)* Ingaladdi Shelter, Northern Territory, Australia engravings: 'xbird tracks' and abraded grooves on buried sandstone slab (14C) **6.8** to **4.9 ka** *(FJ1990)*; unifacial and bifacial points appear at about **2.8 ka** *(CC2002, MJ1999)*	Paleolithic-Neolithic Transition = 'Incipient Jomon' (10-13 ka) 'Kamikuroiwa Cave, Ehime, Japan - Layer 9 (14C) **12.165±0.35 ka**; UP tools, bifacial foliate points, shouldered arrowheads, pressed 'ridge pattern' earthenware; grooved whetstone or grindstone, engraved natural cylindrical pebbles, ~ 4 cm in length, possibly depicting 'breasts, skirts, long hair' *(BR2003; Wikipedia)*
Boomplaas Cave (14C) **4.45±0.75, 5.0±0.75**; Late LSA Wilton industry; 4 painted stones like those at Klasies River Mouth Cave 5 LSA *(SR1982)*	Ksar Akil, Lebanon VII/VIII-XIII (14C) **32 ka** *(CG1989)*; Aurignacian; XI, cobble for crushing ochre *(GI1991)*		Mt Yengo Shelter, New South Wales, Australia (14C) **5.98**; also **4.59**; **2.84 ka**; buried engravings, Panaramitee style: 'circles, dots, tracks' associated to **5 to 6 ka** dates *(FJ1997)*	
	Ein Aqev (D31), Negev, Israel 12: (14C) **19.0±1.2 ka** 5-11: (14C) **17-18 ka**; Non-Aurignacian/Non-Lagaman; *Dentalium, Nassa gibberula, Mitrella shells;* red and yellow ochre all levels, 3 *Nassa* smeared with ochre *(MA1976, WJ2003)*		Mushroom Rock West, Cape York, Australia Upper: (14C calib) **4.5 ka** (TL) 8.6 ka; bipolar, single and multi-platform cores, blade and burin cores, point, backed micro-blades, elourae, ground-edge adzes; used pigment for painting *(MJc1995; MJa1995)*	

To condense space the following table lists additional **Levant/Southwest Asia** sites horizontally in descending chronological order, sometimes by geographic area.				
Late Levantine UP: General: multiple reduction strategies (opposed platform for large blades; single platform for bladelets), soft-hammer, 'classic' blade and bladelet products, abundant microliths, bladelets with fine, continuous retouch; backed bladelets and points are rare; large tools include endscrapers, burins, truncated blades *(FC1988);* red ochre reported from almost every site dating between 30 ka and 8 ka *(BO1997);* every listed Early Kebaran (Epipaleolithic or Mesolithic) (20-30 ka) and Geometric Kebaran (13-20 ka) site has symbolic art as well as red ochre				
Boker BE, Negev, Israel Levels IV, II; Boker (D100) Area A; Ein Aqev East (D34) Late Ahmarian *(FC1988)* E. Aqev E., *Dentalium* bead *(GI1999)*	Ksar Akil, Lebanon- VI-VII VI (AMS) **31.2±1.3** and **32.4±1.1;** VII (14C) **32.0±1.5** *(MP1989)*; Atlitian, UP Stage 5 [Late UP] *(CG1989)*	Nahal Ein-Gev I, Israel **~20-25 ka** *(BO1997)*; Atlitian, female *H. sapiens sapiens* burial *(BA1992)* or Aurignacian *(GI1991)*	Ksar Akil, Lebanon I: (AMS) **~22-23 ka;** III: (AMS) **21-29 ka** with 8ac (AMS) **29.3±0.8** *(MP1989*; Level I-II, Early Kebaran, *H. sapiens sapiens* burial; Level III (8c) gazelle metatarsal awl 10 cm, 167 / incisions in 5 columns, 32-35 marks each, some 'V, X's, hooks' *(TJ1974)*	Ohalo II, Israel (14C calibr.) **22.5-23.5 ka** *(BA1992)*; Early Kebaran, *H. sapiens sapiens* burial with gazelle bone polished and incised with // marks behind head and similarly incised wooden object *(ND2006)*; few standing stones, e.g. elongated amygdaloid shape outside perimeter of huts and small erect stones under floors; hundreds of *Dentalium* and *Columbella* shell beads *(ND2003, 2004)*
Jiita Cave, Lebanon Level II (est.) **~21-29 ka**; Early Kebaran; 3 gazelle bone tools (1 awl, polished, incised with 1 row 'zigzags' 2nd row 'zigzags and Vs', 3rd row 'several bi-lines,1 X' like Ksar Akil; ochre; *Dentalium* beads, other shells with natural or intentional perforations *(CL1977)*	Urkan e-Rub IIa, Israel (14C) 14.4 ka, but too young in light of Early Kebaran tools; abundance shell beads, polished limestone pebble (not local) engraved with 8 sets of parallel lines, 3 with 'ladders'; obverse 2 'ladders' in 'V with fill of cross-hatch' *(HE1990)*; may represent gazelle drive corridors *(BO1997)*	Ein Gev I and II, Israel **~16 ka** *(BA1992)*; Kebaran; Ein Gev I female *H. sapiens sapiens* buried in hut, flexed on right side, 3 bovid horns near left shoulder *(BA1992, GI1991)*	Wadi Mataha, southern Jordan (14C calibr.) **16.5-17.6 ka**; Geometric Kebaran, *burial (GI1991)*	Neve David, Israel (14C calibr.) **~15 ka**; Geometric Kebaran; 2 fragmentary skeletons, covered with a few mortars and stone bowls *(BA1992, BO1997)*
			Yabrud III, Syria Levels 4, 6, 7; Geometric Kebaran, perforated shell beads, ochre, grinding stones *(RA1950, GI1999)*	Wadi Dhobai K, Jordan Kebaran, hut *stone circles*, with orthostats (structural?), few beads *(AT2005)*

Klasies River Mouth, South Africa Cave 1, Layers 1-12, LSA, red ochre, ostrich eggshell; Lower and Upper Midden, LSA, perforated cowry shell, perforated slate pendant, bored circular stone disc; slate palette with traces of red ochre; Cave 5 Cutting and Midden, LSA, many pecked pebbles bearing traces of red and black pigment; 12 other rock fragments with black or brown ochre; 1 flat boulder painted in black with thin white lines, a man and 4 fish or dolphins; flat pebble with red grid pattern on both faces; striated slate palette; (14C) **315±105** bp; *(SR1982)*	Hayonim, Israel – Layer D (14C) **27-29 ka**; Aurignacian; 5 engraved gazelle scapulae (tally marks?) *(DS1974)*; several limestone slabs bearing red ochre and black pigment; 2 engraved limestone slabs, 1 'speared horse' 'Ys, bi-lines, hooks, fluid lines' overmarked with red ochre; perforated horse and deer teeth, wolf canine; bone pendants *(BO1997, MAa1997)*		Sandy Creek II, Cape York, Australia Upper Levels: (calibr. 14C) **4.232 to 1.992 ka**; (TL) 5.4±0.7; 4.4±0.2 *(MJ1995)* 'more consistent blade production', burren adze slugs, 3 backed tools: 1 geometric microlith, 1 Bondi point, 1 eloura; pigment utilized *(MJ1995)*	
			Roonka, South Australia (14C) **~4.0 ka**; 2 skeletons, *H. sapiens sapiens*, adult and small child in 'most elaborate status burial yet found', skin cloak with bone pins, paws of animal pelts, fringe of bird feathers, child bore bird skull pendant, necklace of reptile vertebrae, feet stained with ochre *(FJ1983)*	
	El Wad D, E E: Lower Aurignacian D: Upper Aurignacian *(GI1991, CG1989)*; twin pendants *(BO1997)* [breasts--JBH]			
	Erq el-Ahmar D, B, Israel D: Lower Aurignacian B: Upper Aurignacian (GI1991); Dentalium shell beads, bone beads *(BO1997)*			

Qasr Kharaneh IV, Jordan Phases A, B, C, D (estimated) ~12-20 ka; B: Classic Kebaran, 2 skeletons buried beneath living floor, 1 with 2 medium-sized stones over head and 2 over legs; D: Final Geometric Kebaran, Dentalium shells, several pieces of ochre; engraved bone radius incised with 9 regular incisions *(MM1988)*	Öküzini Cave, s. w. Turkey Epipaleolithic (Zarzian) **~13-14 ka**; 2 engraved pebbles: 1st 'aurochs, speared'; 2nd 3 sets of 4x8x8'ladder' patterns; obverse 'ladder corridor' enters circle with small circles around interior perimeter, 'intentional cumulative marking' *(BO1997, MAa1997)* latter may represent corridors for gazelle drives *(BO1997)*			
Reconstructed Early-UP/ELSA 'Route': EUP/ELSA industries seem first to occur in Africa (~50/60 ka), Southwest Asia (~>45 ka), South Asia (~45 ka), Southeast Asia (~31ka), Australia (~>28 ka) and East Asia (~32 ka). Considering these dates it appears possible that EUP may have diffused from Africa to Southwest Asia and South Asia but the simultaneous dates for Southeast Asia, Australia and East Asia suggest that in these regions and possibly all regions EUP industries could reflect independent, multi-regional, convergent innovations built on shared Mid-MP technologies. **Reconstructed Mid-UP/ELSA 'Route':** Mid-UP (microblade) industries appear first to occur in Africa (~30-32 ka), Southwest Asia (~32 ka), South Asia (~25 ka), Southeast Asia (no data), Australia (~5-9 ka) and East Asia (~21 ka). These microlithic industries appear to occur across the 'Southern Route' about 10k years later than the emergence of EUP industries although this could reflect a dispersal at around ~40-50 ka it could just as well be convergent innovation in each region. This is the most likely hypothesis for Australia and perhaps also Southeast Asia. Also the contemporaneous dating for the Aurignacian and Atlitian in the Levant is further indication of a mosaic of multi-regional evolution.				

Why East Africa is the Homeland of Modern Humans

By Alison Brooks of George Washington University and the Smithsonian Institution

*(*As supposed and summed up the Editor*)*

We cannot be too far off in imagining exactly what Dr. Brooks said because we have the main outlines of her recent handout which consisted of 46 'photos' of her "power point" slides, used during her lecture. However it must be stressed that the points to be made are the **suppositions of the editor** and not Dr. Brooks' actual words or sentences. She may not have said, nor wish us to think she said, any thing which the editor supposes!

The main thrust of her lecture is to argue that *Homo sapiens sapiens* began the Great Diaspora in the vicinity of 77,000 BP and from East Africa. To make this argument she sums up evidence from (bio-)genetics, archeology, paleoanthropology, linguistics, and a bit from ethnology, the latter based in part on her own experience of living with Khoisan people in southern Africa. By scientific specialization Brooks is an archeologist who is knowledgeable in modern (bio-)genetics. As an Africanist she is familiar with linguistic approaches to prehistory and speaks at least one African language. In other words she is a 'four fields' anthropologist with a concentration in archeology.

The best way to proceed is to choose some of the 'photos' and sum up their contents in hopes of making the point intended, simply by displaying what is writ thereon. (The 'photos' are numbered 1,2,3,4, etc arbitrarily by the editor.)

1) Title page

2) Root of the modern human tree? Picture of a !Kung San.[1] Genetic? (LO,1), Linguistic? (Khoisan), Southern African?

3) Do Khoisan genetics and archaeology point to a southern African origin? Archaeology of South Africa suggests an occupation hiatus between 60 and 40kyr. "Khoisan" genetics mostly based on samples from Jun/wasi (!Kung) of NW Kalahari, Botswana, Namibia, Angola. Jun/wasi homeland is in S.Angola, not really in southern Africa. [A matter of definition, no?-Editor]

4) Archaeology: Middle Stone Age (MSA) –points, projectile technology, long distance trade, ocher, beads etc. First anatomically "modern" humans appear during MSA (not "bushmen"). Later Stone Age (LSA) --, composite tools, rock paintings, associated in southern Africa with Khoisan speakers.

5) Archaeology of the Jun/wasi region, Botswana: Excavations in northwestern Botswana. Small bifacial points at 77 kyr, early onset of LSA by 40 kyr, bone harpoons by 40 kyr cf C.Africa, bone pts by 24 kyr cf modern arrows. No parallels in South Africa (exc.?Border Cave?). Parallels in Zimbabwe, Zambia –East Africa? (Also shows map and some MSA points 77,000 BP)

6) Pan-African MSA story modeled on South African record. Preponderance of coastal occupations, (led to idea of coastal route 'out of Africa' ?). Ocher, beads, decorated ostrich eggshell at Blombos, other sites after 80 kyr. Non-lineal development, MSA I, II to Howieson's Poort to late MSA.

[1] For non-Africanists we note that the symbols '!' and '/' in this context = clicks. Editor's note.

Discontinuities could suggest repeated replacement events. Homo sapiens later than E.Africa –at 130 kyr. LSA transition also later than E.Africa – ca.26-22 kyr.

7) Eastern Africa –biogeographical boundaries? Western Rift wall/forest to West –"E.Africa" includes eastern edge of Congo. Deserts to north and northwest, "E.Africa" includes Ethiopia, other countries of the Horn. Indian Ocean to the East. Southern boundary –poorly defined in S+SE, Kalahari in SW. Includes Malawi, parts of Mozambique, Extends to Zambia? ? Zimbabwe, North Botswana? Faunal exchange with South Africa limited after 1 my.

8) Eastern Africa's importance for understanding the MSA and the origin of modern humans? Largest contiguous area of woodlands, scrub and savannas, largest terrestrial mammal biomass, largest potential human population, Oldest evidence of *Homo sapiens (*with two pictures of human skulls.)[2] New modern human genetic evidence suggests that East Africa has high diversity, old lineages, largest effective population sizes, possible root of human tree (Tischkoff, et al, 2003). New linguistic evidence suggests Khoisan derives from East Africa (Ehret 2005)[3]. Archaeological potential for excellent chronological control. Long local sequences spanning >200,000 years in Ethiopia (Middle Awash and others), Kenya (Olorgesailie, Narok-Naivasha, Baringo), Tanzania (Serengeti/Olduvai).

9) Tischkoff and Williams, Nature Review Genetics, 3:611-21, 2002. (Editor's note: This large scheme or cladogram or family tree sums up 200,000 years of genetic prehistory. It is so apt and informative that we are reprinting it at the end of our summary of Brook's lecture. We presume that the diagram is entirely the work of Tischkoff and Williams.)

10) Scope of the data. (Meaning of Tischkoff's data). Marshfield Markers (773 microsatellites, 392 in-del markers). Genotyped in 1,048 individual from the CEPH human genome diversity panel, 2,012 Africans from 64 ethnic populations, (Tischkoff lab samples), 108 African Americans from four regions in the US. A total of 3.6 million genotypes.

11) Tischkoff Lab African Population Samples. (Editor's note: It shows a map of African countries with dots on it for sample sites.) (Representing Niger-Kordofanian, Afro-Asiatic, Nilo-Saharan, Khoisan, Pygmy (N.K.) The dots fall heavily in Tanzania, Kenya, and eastern Uganda, as well as Cameroon and Nigeria. One dot for northeastern Sudan (probably Beja) and another for southern Sudan (probably Nilotic). No dots for Ethiopia, Somalia, Djibouti, or Eritrea)

12) Genetic data imply: Single African origin of Eurasian populations – mtDNA shift from L3 to M, Y-chromosome from Group II to III-X (M168 mutation) –no evidence for two routes. Date of LCMA of all AMH mtDNA = 150-200 kyr. Oldest lineages (L), L1, Group I) in "southern" Africa. Major bottleneck precedes diversification. Date of LCMA of mtDNA in only branch with both Africans and non-Africans = 50 plus or minus 27 kyr, oldest

[2] Editor's note: On the left "Herto" [= H.s. idaltu], on the right "Omo". Both are from Ethiopia.

[3] Editor's note: But this is rather old news. Since Greenberg of 1963, we all have been saying this.

possible age for "out-of-Africa" is ca. 77 kyr (? Or 100 kyr if date of chimp-human divergence is 7 mya instead of 5 mya). LCMA of Hadza/Sandawe versus Jun/wasi is ca. 40 kyr. No genetic traces of Neanderthal admixture.

13) Global Substructure: Tribal or population break-down. Too complex.

14) African Substructure. Presumed genetic break-down. Too complex.

15) Correlation of Genetic Structure with Language. Too complex again!

16) Correlation of Genetic Structure with Ancient Cultural Regions. Again!

17) None of rare East African late Pleistocene hominins have Khoisan features BUT Sandawe and Jun/wasi similar. Photographs of three persons, one a Hadza, one a Sandawe, and one a !Kung San. Hadza and Sandawe photos by Sarah Tischkoff. Jun/wasi (!Kung) are NORTH of Kalahari Desert.[4]

18) Origins of Khoisan (Ehret 2005). Linguistic archaeology –traces of extinct Khoisan languages in modern non-Khoisan languages. Implies existence of 4-6 extinct Khoisan lineages all in eastern Africa. Tana River, North Kenya, North Central Kenya, East Uganda etc. Tana River loanwords not closer to Sandawe, Hadza, or South African Khoisan. Loan words mostly relate to arrow poisons, honey (and bees), forest, hunting.[5]

19) Was Eastern Africa Different from Southern Africa? What characterizes the MSA of East Africa – After 130,000 BP and Before 130,000 BP ? What is the nature and age of the MSA/LSA transition? Is there a relationship between the biological evolution of *Homo sapiens* and behavioral change? Acheulean to MSA transition?

20) What caused/allowed modern human population expansion out-of-Africa? Reduction in niche area within Africa? Cultural innovations? (e.g.) technologies, economic intensification? (complex projectile systems, fishing). Larger scale social networks, risk reduction (long distance raw material procurement up to 300 km). Symbolic information storage (beads, decorated OES) – reinforce and reify networks? New technologies and larger social networks begin before 130 kyr in East Africa, only become widespread after ca. 90 kyr.

21) Long Post-Acheulian sequences 500-200 kyr. Middle Awash (Ethiopia), Baring (sic) Baringo (Kenya), Naivasha-Narok and Olorgesailie (Kenya). Ol Kesiteti Formation (OK) 493-165 kyr, 10 sites. Ol Tepesi Formation (OTF) 130-64 kyr, three sites so far.

22) Aduma, Middle Awash, Ethiopia. A larger and a smaller map to show where it is.

23) Early Middle Stone Age (>100,000 BP). Points: Site Aduma A-1. Small Handaxe or ?Point. These shown in an archeological display of artifacts.

24) Aduma MSA (Ethiopia) ca. 90,000 BP. Points and such in a stratified site. Too complex .

25) Olorgesailie basin (South Kenya Rift) post-Acheulian. Cf 21 above.

26) MSA obsidian point area B-OTF. Cf 21 above.

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[4] Editor's note: This is an important observation. Old fossil humans lacked so-called Khoisan features.

[5] Editor's note: It seems to be a reference of convenience, i.e., most of this has been known and talked about by Africanists and prehistorians for the last 40 years. But a current source is nice to have.

27) Grindstone fragment with ?coloring material? Area B-OTF. Cf 21 above.
28) G-OK-1 220-290+? Kyr in situ. Picture of two stone artifacts.
29) MUMBA V 1.3-1.6. (Of Tanzania) Display of various points.
30) MUMBA V 1.3-1.6. More of the same.
31) Cultural Innovation? Aduma, Ethiopia. Display of artifacts. A-5 <90 kyr (OIS 5a) small points --?arrowheads? Atlatl dart tips? Poison? And A-1 >100,000, big points, thrusting spears?[6]
32) MSA Points OIS 5-4. A symbol similar to "#" is used but with only one vertical line.; it indicates a click, so the word #Gi Botswana is a Khoisan place name in Botswana of 77 kyr. Also Tabelbala, Algeria of ?60-130 kyr?. (A complicated page of artifacts compared between these two places and the Middle Awash of Ethiopia. From Lower Stillbay to Middle Stillbay to Upper Stillbay to Magosian.)
33) A page of schemes, comparing something at Tabun of Israel and 'African' sites. Based on Brooks et al. 2005.
34) Projectile point size in the Levantine Mousterian versa later MSA. Length v. width at Tabun and at 'African' sites.
35) Ethnographic Atlatl dart weights. (Compares Tabelbala, #Gi, and four levels of Aduma with ethnographic weights.)
36) Middle Palaeolithic/MSA hands. Picture of hand bones from La Ferrassie of 70 kyr (presumably Neanderthal) with Shaanidar 4. And some artifacts from Olduvai of ca. 1.8 mya and Kapthurin of ca. 0.5 mya. (Editor: Why?)
37) Why are Projectiles Important? More success. Less Duress. Survivorship increases. Competitive advantage.(Accompanied by a picture of some imagined prehistoric scene).
38) Complex projectiles as language. Each element has a separate function in whole (point, haft, linkshaft, mastic). Each can be substituted for another in the same class but not for an element of a different class. If different element inserted, "meaning" is different.[7]
39) MSA and LSA personal ornaments. (Pictures of mostly round small objects). Cave of Hearths, Boomplaas (sic?) Blombos, Bushman Rock Shelter, Kisese II and Zombepata (Zimbabwe) Cooke 1971, S.Afr.Archaeol. Bull.; Border Cave, Beaumont et al. 1978, S.Afr.J. of Sc.; Loyangalani (Serengeti), Thompson et al. 2004, *Paleoanthropology Society*, Montreal; Enkapune Ya Muto (Kenya), Ambrose 1998. JAS.; Mumba (Tanzania) Conard 2005. In d'Errico & Backwell. Wits: Johannesburg. Slide courtesy F. d'Errico.
40) Symbolic behavior, social intensification after 90 kyr (South Africa, Namibia, Tanzania, Ethiopia, Senegal). (Pictures of 'etchings' on something, either pot or stone). Blombos Cave. Ca. 76 kyr. Photos: National Geographic, F. d'Errico. Diepkloof Shelter ca. 60 kyr. Photo courtesy J.-Ph. Rigaud.

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[6] Editor's note: the reader is urged to look back at Harrod's paper to get some perspective on these objects.
[7] Editor's note: We have always wondered why it is that among the scores of warlike East African tribes the SPEAR is completely dominant. Hunters and a very few sedentary tribes use the bow and arrow. Nowadays in the hyper-warlike north Kenya-Ethiopia borderlands the RIFLE or the Kalashnikov are becoming dominant.

41) MSA of East Africa 90-40 kyr. Levallois technology. Bladelets, backed bladelets, segments, micro-MSA points. Bifacial and unifacial points, regional styles. Long distance transport of obsidian. Ocher processing, grindstones. Beads. Fishing. LSA without MSA forms appears at Mumba, Enkapune ya Muto, before 40 kyr (Ambrose 2002, e.g.)

42) Bilate River, Ethiopia. Map of a site's location. Coordinates 7^0 08' 45.84" North, by 38^0 14' 39.34" East. Elevation 6038' (about 1830 meters). (Editor's note: roughly midway between Lake Zway and Soddu or close to Alaba country or the Gurage-Sidamo-Wallaita 'zwischengebiet', arguably the heart of highland Ethiopia, not far south of Addis Ababa)

43) Bilate Survey. Photos of the site. (No indications of the contents of site.)

44) With Thanks to: T.D.White, B. Asfaw, Y.Beyene, and the MAW team. R.Potts, K.Behrensmeyer, A.Deino, and the Olorgesailie team. Mike Mehlman, D.Helgren, Stanley Ambrose, Raymonda Bonnefille, Ken Ludwig, Jim Featheras, Paul Renne, M.Tappen, K. Stewart. National Museums of Kenya and Ethiopia. Sponsors: NSF, CASHP, Smithsonian.

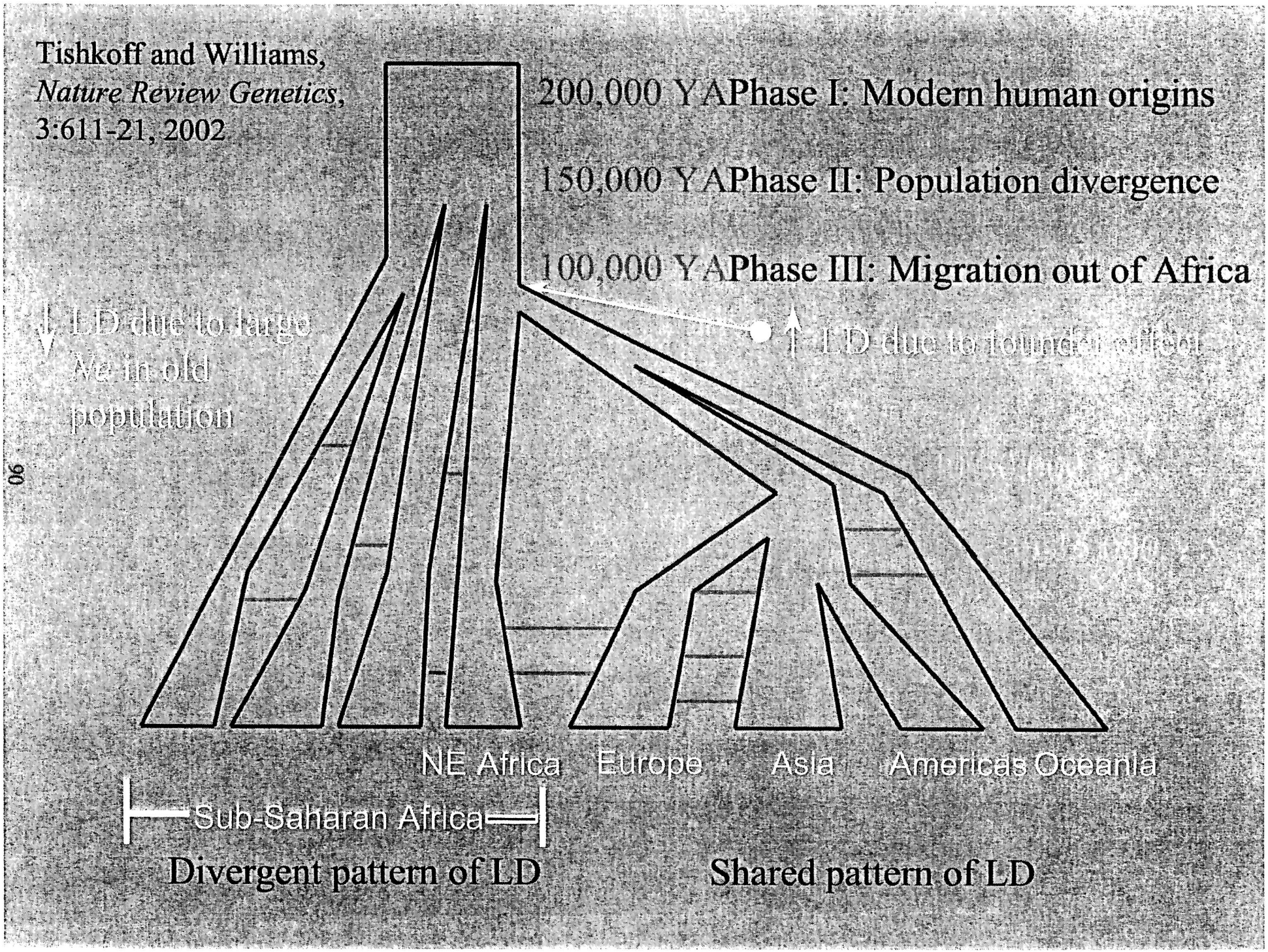
45) Mumba Shelter. MSA ca. 130-45 kyr. (two pictures of the site). (Editor's note: appears to be a very deep excavation, easily at least 20' already excavated.)

A Note on the Tischkoff and Williams reprint (overleaf):

This chart or scheme is extremely valuable for prehistory. One is encouraged to **study it closely**. Not only does it give major gross periods (e.g., 200,000 YAPhase I: Modern human origins, etc.) but its cladogram divides subsequent humanity into eight major segments which correspond to many other things that we know. Sub-Saharan Africa with its four main divisions reminds one of the four major linguistic phyla. One segment is labeled **NE Africa** but that is a region which is dominated by the Afroasiatic phylum. And that segment connects up with the offshoots which may in fact simply represent the Great Diaspora. While there does seem to be one basic movement or 'lineage' from NE Africa which leads to the rest of humanity, there is a subsequent division into two major parts, one of which goes to **Oceania** while the other goes to Europe, Asia, and the Americas. Does that not remind one of Borean and Levantine? However, if this (bio-)genetic scheme is correct, i.e., is near to real prehistory, then **Fleming's Levantine hypothesis is probably FALSE.** At least in the part that joins the other African phyla to the Oceanic lot.

However, the **archeological conclusion** may not eventually agree with the (bio-)genetic conclusion, as Harrod's massive study suggests. One is also reminded of all those areas which have not been well **excavated** by archeologists, i.e., much more is there to be discovered, as well as the scores of Ethiopian tribes and Sudanese who have **not yet been 'bled'** by anyone. New research is pouring in and it/they may upset the present picture. Or not.

One difficulty with some of these presentations of 'photos' of slides is the abbreviations and acronyms which we do not understand because we did not hear the lecture. For example, on the next page we are unable to tell you what LD stands for or *Ne* for that matter. Or CASHP among the things thanked.


Tishkoff and Williams,
Nature Review Genetics,
3:611-21, 2002
200,000 YAPhase I: Modern human origins
150,000 YAPhase II: Population divergence
100,000 YAPhase III: Migration out of Africa
LD due to large Ne in old population
LD due to founder effect
NE Africa
Europe
Asia
Americas
Oceania
Sub-Saharan Africa
Divergent pattern of LD
Shared pattern of LD

TROMBETTI, GATTI AND THE BIRTH OF THE INDO-PACIFIC CONCEPT

Jonathan Morris

Amended version of paper delivered at 9th Esca Conference at the Faculty of Sanskrit, Harvard University on 21/10/2006.

In Glottologia (1923), Trombetti makes copious references to a work by a certain Riccardo Gatti entitled 'Studies on the Andamanese-Papuan-Australian linguistic group' which appeared in instalments between 1906 and 1909. Gatti appears to have been one of Trombetti's research students, although we can see that Trombetti was closely involved in the project, since for each of the first two volumes, he wrote an introductory essay, and it is clear from the lack of comparative morphological analysis in the main text that Trombetti did most, if not all of the work in this field. Gatti essentially took four series of lexical data, Curr's data on the Australian languages, Ray's data on British New Guinea, Schmidt's data on German New Guinea and Portman's data on the Andaman Islands, as well as a series of Tasmanian vocabularies and looked for cognates which are almost all of a CVC or VC or CV type, applying fairly tight phonological constraints. Stops in two languages had to belong to the same series, liquids had to match liquids, spirants had to match spirants or related stops. As a result of this exercise Gatti found about 1,000 matches across 100 lexical items, for each of which he found multiple correspondences. I believe that this work was the first to draw comparisons between Australian, Papuan and Andamanese, for the simple reason that it was not until 1895 that Ray's data provided a critical mass of analysable data for genuine Papuan languages, with Schmidt's work on German New Guinea following shortly afterwards.

Evidently, this early data was not up to modern standards. Trombetti and Gatti used a large Australian data set which appeared in Curr in 1886, which while probably the best available at the time, suffers from two serious drawbacks in that the languages of the Northern Territories are seriously underrepresented and it contains few actual language names, just geographical descriptions of the '200 miles NE of Newcastle' of variety and thirdly it appears that a lot of the data was collected second hand, not necessarily by trained linguists.

Despite this, Gatti and Trombetti's data does seem to be robust to the small set of Proto-Papuan/Proto-Australian reconstructions that appear in Foley.

THE INTELLECTUAL BACKGROUND TO TROMBETTI'S IDEAS

Trombetti received an orthodox university education in Indo-European and Semitic linguistics, graduating in 1891. When he was 20 or so, i.e. around 1886, he tells us that he had read Brugmann's grammar of Indo-European. He then spent 12-13 years in obscure teaching jobs, struggling to raise a large family and only re-emerged when he won Queen Margherita's essay prize in June 1904 with two papers, one on African linguistics and another on the links between Semitic and Kartvelian, which were highly praised by a jury which included Ascoli and Hugo Schuchardt. This prize also appears to have entailed

immediate tenure at Bologna, which transformed Trombetti's circumstances overnight. The following year his first major defence of monogenesis appeared, L'Unita del Origine del Linguaggio, which won both praise and condemnation.

Evdently, this project had long been in gestation, as is highlighted by a series of quotations from Glottologia.

"Initially with a practical and mildly philological intent, I set to the study of the main European and Oriental languages, until I read Karl Brugmann's 'Grundriss' in my twenties and was pushed for good into the field of comparative studies. Discovering the 'Grundriss' after Bopp's 'Grammar' and Schleicher's 'Compendium', I could hardly avoid being disorientated by the novelty of the doctrines expounded, whence I turned to comparative studies of Semitic, Uralo-Altaic and Dravidian. Returning to Indo-European after acquiring clear notions of manifold linguistic processes, it seemed to me that the Indo-Europeanists were dominated by rather limited ideas, and the unlimited faith I had had until then in the methods and results of Indo-European glottology was shaken. My reaction that followed led me, as was usually the case, to the opposite extreme." (G, Preface P. 1)

"At the start of the introduction [to UdO] it is stated that the intention of my studies was not originally to demonstrate the unity of human language but to establish definitively whether a genealogical link could be found between the Semitic and Indo-European languages, no matter how remote. It is worth repeating this for those who insist on seeing nothing more in my work than the monogenesis of language, and even worse, imagine that I was moved by a preconceived thesis." (G, Preface P. 2)"

"I was led to confront the problem of linguistic relationships in all its breadth for the reasons given in the introduction.[...] and having broadened the field, in 1902 stumbled unexpectedly on a series of precise correspondences between African numerals and those in the Munda-Khmer languages of India and Indochina, a fact of capital importance that many continue to ignore and that can only be explained by accepting a common origin."

In my view, the following quotation from Glottologia is particularly illuminating;

"The fundamental problem that Franz Bopp set himself, that of the origin of grammatical categories, could not be solved with the data provided solely by Indo-European languages. It was necessary to extend greatly the comparisons and enquire into the processes of the more archaic languages themselves." [G. p.3]

Hence, Trombetti had seen a small number of grammatical elements (mainly prefixes and suffixes, as will be seen below) repeated across all the world's languages, and if polygenesis were true, he would have to deny *a priori* any relationship between them. In other words, his data forced him into a monogeneticist stance.

At the same time, the consensus view was one of polygenesis. Here is Trombetti again from Glottologia.

Initially, the unity of language was generally accepted, either on account of religious tradition or due to vague intuition, or due to insufficient if not false proofs. This was a period of pre-scientific dogmatism, in which the single origin of man was also admitted. In the second half of the last century, Pott, Schleicher and F. Muller introduced the opposite dogma to science of the polygenesis of language. Given the great authority of these masters of glottology, it is hardly surprising that their theses, although unproven and unprovable, were followed by the majority without examination. In this way, honest attempts to connect one primary group to another were judged anti-scientific and condemned a priori with many withdrawing from fertile researches to the great detriment of the science. It is true that there was no shortage of authoritative voices (Max Müller, Whitney, Georg von der Gabelentz and others) who warned that they could demonstrate the relationship of languages rather than the contrary and that the possibility of a common language of all the languages of the world could be demonstrated. These voices, however, were too often overwhelmed by the cries of their adversaries, who set themselves up as unappealable judges and prophets and condemned in advance any one who wished to cast a glance beyond pre-established frontiers. At the same time, the unitary hypotheses was nevertheless recommendable, even as a simple 'working hypothesis', as Latham had recognized since 1849 "the more the general unity of human language is admitted, the clearer will be the way for those who work at the details of the different affiliations" [G. pp. 189-90]

The above nevertheless requires some elaboration.

As is known, a series of ideas which had been percolating through linguistics since the end of the 18th century, notably in Germany, crystallized in the 1860s most notably in the work of the biologist/embryologist, Ernst Haeckel and the linguist, August Schleicher, on account of the impact on the work of the two of Charles Darwin's theory of natural selection, as expounded in the Origin of Species, which appeared in 1859. What must be emphasised is how closely Haeckel and Schleicher interacted between 1861-68 when both were at the University of Jena, with Schleicher dying in the latter year. This is all illustrated in an intriguing essay by Robert J. Richards[1], which showed a kind of feedback loop in which the two Germans were initially influenced by Darwin, but that Darwin then himself became interested in Schleicher's doctrine of the independent nature of language and began to see the copious evidence for linguistic evolution as being serviceable for the defence of his theory. Richards concludes that Darwin actually strayed from the Lockian path of regarding language as subordinate and secondary to mind towards German Romanticism.

Now, Haeckel, whose formulation of evolution was the dominant one as late as the early years of the 20th century, certainly in Germany, which was the linguistic superpower of the time, saw primitive tribes as subhuman. As late as 1906, he was publishing statements such as:

[1] Robert J. Richards: The Linguistic Creation of Man: Charles Darwin, August Schleicher, Ernst Haeckel, and the Missing Link in Nineteenth-Century Evolutionary Theory – available online at http://home.uchicago.edu/~rjr6/articles/Schleicher--final.doc.

"The most primitive races, such as the Veddahs of Ceylon or the Australian natives, are very little above the life of anthropoid apes." [2]

He goes on to say that even though an 'ordinary philistine' or 'third rate official' is above these ape-men, such members of 'civilised' societies were still miles behind the genius of a ' Goethe', a 'Darwin' or a 'Lamarck'.

Linguists such as Klaatsch and Schmidt heartily endorsed Haeckel's views. Leaving aside ethical considerations, I think that it is important to note that there is no causal chain of reasoning which leads inexorably from this idea of racial superiority to a polygenetic origin of language. In fact, it could equally be argued that if primitive peoples do represent a 'missing link' between apes and men, then the structure and content of their languages should represent earlier stages of language development, and it is actually rather surprising that Haeckel, with his famous doctrine of 'ontogeny' recapitulating phylogeny, should have held the views that he did. My own conclusion is that Schleicher, before he had become a Darwinist had already raised August von Schlegel's 1818 classification of languages into isolating, agglutinative and inflected to the status of an absolute truth and that Haeckel, who initially took over a series of ideas from his older friend such as the idea of language as an independent organism, the idea of the tree of linguistic relationships, came to a view that ape-men had been concentrated in his drowned continent of Lemuria, had migrated to opposite ends of the island and had already split into separate races with entirely separate ways of thinking before they spread across the globe. The reason that they took Humboldt so seriously appears to be rooted in the Romantic view of language as being able to influence mental processes, and presumably because they saw different peoples apparently reasoning in different ways, they concluded that while humans had an innate language facility, it had from the start taken irreconcilably different forms in different groups. This idea that different peoples think in entirely different and even mutually incomprehensible ways evidently was widely accepted, and we can think of such figures as Oswald Spengler, writing 60 years later. Evidently, this may be no more than an attempt to intellectualise a disgust with the notion of being related in any way to 'Untermenschen', but the fact remains that while being a logical *non sequitur*, this view did establish itself as the dominant one in the late 19th century.

To Trombetti, however, it represented the unwarranted intrusion of ideas about mind and race into his field, and he believed the precise opposite: In Glottologia, he cites Schwalbe's demonstration that the Pygmies were highly evolved, and further states that primitive man had reached a high state of both linguistic and cultural evolution at an early stage.

"the greatest marvel that I have proven in the course of my investigations refers to the degree of development that human language had attained in the unitary period prior to the first great emigrations" [G. p. 209]

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[2] Haeckel, E., Last Words on Evolution, pp. 100-1, Trad. J. McCabe – Cited in Hawkins, M., Social Darwinism in European and American Thought, p. 140, Cambridge University Press, 1997.

"even in the remotest times, we find both a notable degree of culture and well-developed languages. Here and there, especially in peripheral regions, a physical and cultural decadence followed, while language could often remain almost unaltered." [G. p. 315]
"the numbering system in the unitary period was already fully developed" [G. p. 212].

Evidently, the reason he thought this was firstly, because his data pointed to long-range linguistic relationships, notably between Africa and Asia, and secondly, because as a pure linguist, he wasn't remotely interested in grounding his views in theories of mind.

From a synchronic perspective, Trombetti pointed out that Von Schlegel's tripartite classification of languages wasn't a particularly useful classification, since languages that were supposedly firmly in one category showed affiliations with the others, so that English, evidently part of an inflected category, could be almost isolating in its constructions, Finnish could show inflected behaviour, and so on.

From a diachronic perspective, it's interesting to note that Trombetti took over Max Müller's views pretty much wholesale. In 1861, Müller had proposed that originally languages were monosyllabic, but that through a process of phonetic decay, had become agglutinative and eventually inflected. We can only wonder whether Trombetti's contemporaries also spotted this affinity and tarred him with the same brush as Müller, who had been dismissed in his day as favouring anecdote over intellectual rigour. Be this as it may, we may note that Trombetti extended the theory to predict that monosyllabic languages such as Chinese had actually descended from inflected languages, and while it's not clear whether he was the first person to do this, he certainly predates Jespersen, who pointed this out in 1922.

Finally, Trombetti was influenced by classical Indian linguistics in his belief that words could be decomposed into a root to which prefixes and suffixes had been added, and conversely, this reflected a process of agglutination. Furthermore, certain roots could have been formed from fusions of smaller roots. This concern is present in Gatti's works, which devote a great deal of space to finding nominal compounds and evidence for prefixing and suffixing in Australian. Indeed, Trombetti believed that Bantu and Andamanese had cognate prefixes, **Bantu**: aka-mwa (mouth) and **Béa** aka-bang-da, **Bálé** aka-boang, etc. (mouth), where aka was originally a prefix indicating body parts, and **Bantu** ele- (one of a pair)/**Béa**, **Bálé** i-dal, **Kédé** er-tol (eye); **Kédé** ir-pol (two). Indeed, the fairly large section of Glottologia devoted to a comparative analysis of prefixes and suffixes is very similar and actually more extensive in scope than Greenberg's work, and may still have some insights to yield. This idea of analysis of words into roots goes back at least a century to Horne Took, but Trombetti applied it in a novel way to demonstrate long-range cognates.

TROMBETTI AND GATTI ON INDO-PACIFIC

Between 1905 and 1923, Trombetti became much more specific about identifying India as the cradle of language, on the grounds that it was the area containing the largest number of major language phyla and had an apparent relative abundance of fossil

evidence (although he admitted that the possibility of Africa also intrigued him. From an Oceanic perspective, India was not such a bad guess, since, on the one hand, the modern 'Out-of-Africa' initial rapid 'beach-hopping' model actually does posit India as a secondary origin for such languages.

His model for this dispersion was an extrapolation of Johannes Schmidt's 'Wave Theory' (1872) originally formulated to explain the spread of Indo-European, further postulating that the spur to migration had probably been the pursuit of dwindling supplies of game, which in turn moved further away, leading to yet more migrations.

Trombetti's belief that migration and survival in general required highly developed cognitive abilities led him to reject the concept of 'primitive' humans, citing evidence that Bushmen[3], Pygmies and the Aborigines of Australia and Tierra del Fuego had highly evolved cultures that were in no way inferior to 'civilised' men, and sophisticated survival skills to deal with a hostile environment[4].

"*In general, it may be said that the peripheral regions furthest from the centre of dispersion were only reached by the first waves of migration (with the possibility of reflux). In Africa, the first stratum was that of the Negroes, followed by the Southern Hamites (Bushmen, Hottentots, then the Sandawe, etc.) and also in Oceania, the Negroes preceded other tribes. We may deduce from this that the languages of the extreme regions are the most archaic, explaining the apparently strange fact that geographically remote languages often agree with each other more than neighbouring languages*"[5] [G. p. 206].

The prime examples of this were his Munda-Bantu numeral comparisons that he claimed as the starting point for his monogenetic theory:

It should be clear from the above that it was entirely natural for Trombetti both to expect the languages of a series of stone age peoples such as the inhabitants of the Andaman Islands, Papua New Guinea and Australia to preserve traces of their original unity in a South Asian homeland, regardless of how remote they had become from each other in geographical terms.

Indeed, in Glottologia, Trombetti states his belief that languages related to those of the Andaman Islands had once been spoken on the mainland of South East Asia (whence the

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[3] On G. p. 312, Trombetti cites Schwalbe's demonstration that the Pygmies were highly evolved, without details, and this at a time when many linguists such as Klaatsch and Schmidt believed that they were a subhuman 'missing link', and in the latter case, even 'pre-Neanderthal'.

[4] At the same time, Trombetti did not idealise 'primitive man', noting that he had probably been a cannibal and may even have preyed on the Neanderthals

[5] On G. p. 168-69, T. applies the principle of "furthest = oldest" to deduce that the languages of South America are probably much older than those of North America, adding that "from the preceding considerations, we deduce that the closest relatives of the North American and Palaeosiberian languages should be sought in the Uraloaltaic and Indochinese groups, which are still geographically closer, while for the South American languages, which separated in remote times, when the current linguistic groups were not yet fully distinct, comparisons could also extend to the Munda-Polynesian and Dravidico-Australian groups.

Andaman Islands themselves had originally been populated), and along the Indonesian archipelago all the way to New Guinea, being displaced by Malayo-Polynesian speakers at a much later date. He thus believed that aboriginal populations of Malaysia such as the Semang were related to the Andamanese, but that only a few traces of the latter's original language remained as a substrate in an otherwise Mon-Khmer language. He nevertheless cited some examples of these drawn from Skeat and Blagden (e.g. **Semang SNAKE** jĕ-kob, i-kob, see **SNAKE-2** below).
It may be this insight which led Trombetti to formulate a discrete Andamanese-Papuan-Australian language family. The fact remains that he appears to have changed his views rather suddenly, some time between late 1905 and mid-1906.

This is a significant change from the position of Schnorr von Carolsfeld[6], who in 1890 had proposed that the languages of Oceania belonged to a superfamily. In his publication[7] dated July 1905, Trombetti appears to accept the former linguist's claim at face value:

"Indeed, the reciprocal affinity between all the languages of Oceania was affirmed and almost sufficiently demonstrated by Schnorr von Carolsfeld; (it is a pity that the author has not yet given us his promised work on the languages of Tasmania). The Malayo-Polynesian group was certainly connected with the Mon-Khmer languages, while the languages of our Andamanese-Papuan-Australian are particularly close to the Kolh languages, which in turn were connected to the Mon-Khmer group of E. Kuhn and others. If we then also remember the relations with the languages of Africa, the resulting image is one of a cycle or network."
[Trombetti, Unità d'Origine del Linguaggio, 1905, p. 16]

His preface to Gatti published a year later adopts a very different tone.
"As [Gatti] advises, the work is independent of Schnorr von Carolsfeld, despite the merits of the latter, who proposed to show the connection of ***all*** *the Oceanic languages and thus extended his comparisons to Malayo-Polynesian. The need to distinguish two groups is nevertheless evident for lexical and above all grammatical reasons. I shall now indicate what seem to be the principal characteristics of the Andamanese-Papuan-Australian group.*
1) The phonetic system is simple and without spirant sounds. The Papuan spirants are of secondary origin.
2) Words are formed through prefixes and suffixes. Many adjectives are formed by duplication, those with a negative sense often derive from corresponding words with a positive sense.
3) In several languages of this group, there is grammatical gender. In Andamanese, we may note a kind of classification through prefixes (of which traces remain in Papuan and Australian) in names of parts of the body and kinship.
4) The declension takes the form of suffixes or postpositions.
5) An ergative case in use – i.e. of the operant subject. The verb that refers to the same often seems to be conceived as a passive. An extremely common ergative suffix is –da, -du, which is often omitted for personal pronouns.

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[6] Schnorr von Carolsfeld, Beiträge zur Sprachenkunde Ozeaniens, Minutes of Academy of Munich, 1890.
[7] Op. cit. in 5

6) The construction is inverse B-A
7) The pronoun is declined like the noun. The dual and plural are formed in different ways from that observed in Malayo-Polynesian. In the first person of the dual and plural, there is often a distinction between inclusive and exclusive forms.
8) Possessive pronouns are formed in a different way from Malayo-Polynesian. Generally, they result from compounds of the personal pronouns followed by a particle (contrary to Melanesian and Polynesian languages).
9) Conjugation is complex. A final form may be distinguished that is a kind of supine like Latin ire dormitum.
10) Numbers are low, often merely binary.
In almost all these points, the characteristics of Malayo-Polynesian are opposite or different."
[Gatti, Vol. 1, Introduction viii-ix]

In Glottologia, 1923, he merely embellished the above 10 points, suggesting that he had done little additional work on Andamanese since the work with Gatti was completed before 1910[8]. While even in his late works, Trombetti could be irritatingly vague[9], the fact nevertheless remains that between 1905 and 1906, he shifted from the jumble of languages proposed by Schnorr von Carolsfeld to a clearly defined language family which subsumed Indo-Pacific. What's more, as we might expect given Trombetti's interest in prefixes and suffixes, he recognized that what Von Carolsfeld had recognized as phonetic correspondences were actually morphological correspondences.

Having arrived at a discrete group including Andamanese, Papuan and Australian, Trombetti then extended this family to include Dravidian, which appears to have taken place by the time he had published his study of pronouns in 1908[10], largely as a result of his work on pronouns. The Narinyerri[11] language in particular intrigued him:
"The general and extremely close agreement between the Dravidian and Australian forms appears from the pronouns...
Tamil: engal- (we, exclusive)= Aus: ngali, ngadli; Tulu: yenkulu (genitive), yenkule (id.); Aus ngule, ngadli; Tulu: yenkulenu; Aus ngulina
Drav: nān (I), nām (we) = Narrinyerri nān (me); nām we = Dabu (Papua) nana (I);
Drav: nam (we) =Narrinyerri nām (we); Drav: num (we) =Narrinyerri nōm (we)

Given that Narinyerri also bore similarities to Andamanese

Narrinyerri: ngu-rra, ngu-rre (you sing.) = General Andamanese: ngo-lla, ngu-le [also found in Aus 88, 205 ngooro, 84 ngurra, ngurru, 85 nooroo, 207E ngoro]
Narrinyerri: ki-tje (he) = ki-te (Kede), li-le (Juwoi)

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[8] I have found references to an article which Trombetti wrote in 1921 on Papuan-African connections (Festschrift Meinhof) and another in 1926 on Tasmanian (Acts of the 22nd International Conference of Americanists), but have not succeeded in locating the original papers.
[9] e.g. with his bad (by modern standards) habit of describing languages as "intermediate" between language families, such as Basque as 'intermediate' between Kartvelian and Hamito-Semitic.
[10] Trombetti, Alfredo Saggi di glottologia generale comparata: 1 I pronomi personali, Royal Academy of Science of the Institute of Bologna, 1908.
[11] Modern Ngarindjerri – located on the lower Murray river and the Fleurieu peninsula in South Australia.

Narrinyerri: mei-ke, mey-a-k (North) (who?, what?) = me-če (who?), mi-a-k, me-a-k (what?)
Narrinyerri: ninka-ienk, ninga-u (South) (two) = ninaga (Önge)

It is immediately clear that this revision of his hypothesis to include Dravidian is problematic with regard to Trombetti's own data, in that Dravidian shows better matches with Australian than with Andamanese or Papuan. Furthermore, Trombetti had noted that Dravidian showed far greater affinities to Hamito-Semitic (including a link to Nilotic through Elamite) than to Bantu-Sudanese[12], while his analysis of prefixes suggested that e.g. Andamanese was closer to Bantu-Sudanese.

Trombetti has bequeathed a problem to us, since conventional wisdom regards the Dravidian presence in South India as a relatively recent (i.e. Neolithic) incursion from the North West. There are evidently four possible explanations: a) chance similarity, b) extraordinary longevity of ancestral features in both languages (i.e. of the order of 40,000 years) despite great spatial separation, c) a continuing Australian presence in India, d) some kind of post-glacial Dravidian presence in Australia.

Our discussions at the conference made some progress here in that Václav Blažek showed systematic correspondences in numerals, although he argued in favour of c), i.e. Dravidian borrowing from a persistent Australian substrate language in South India. As is known, Dravidian has been regarded as a putative member of Nostratic, and Blazek stated that he was not prepared to abandon this affiliation. This places a burden of longevity on Australian, and raises the question as to why it is so long-lived in South India but then disappears without trace there.

Where Blažek and my interpretation of Trombetti's data converge is in the view that these similarities are probably loans rather than close cognates, so that we can rule out hypothesis a) of chance similarity. It nevertheless seems more likely to me that it is Australian that has borrowed from Dravidian and that we are underestimating the extent of post-glacial trading networks and population dispersions (although admittedly here, an enforced dispersion seems more likely since it is not immediately clear what the commercial attractions of trading with Australia would have been, nor, as far as I am aware, is there any evidence for Australian artefacts/bones, etc. outside Australia). There is some genetic work by Redd, A.J., Roberts-Thomson, J. et al.[13], that argues for gene flow from India to Australia with putative dates for genetic divergence in the 3,000-1,000 BC range, whence we would infer that the incoming Indians were Dravidian speakers, although the findings of this paper are still controversial. It is hard to say more until this issue is settled by genetics, although both c) and d) would seem to indicate an earlier Dravidian presence in South India.

[12] I use the term Bantu-Sudanese with Trombetti's meaning. It is clear from his work that the term is equivalent to the modern 'Niger-Congo'. See 1, p. 92 for discussion.
[13] Redd, A.J., Roberts-Thomson, J. et al., Gene Flow from the Indian Subcontinent to Australia: Evidence from the Y Chromosome, Current Biology, Vol. 12, Issue 8, 16/4/2002. pp. 673-77.

Trombetti was also perfectly well aware of the sharp linguistic and territorial distinction between what he called Melanesian languages spoken on the coast of New Guinea and the Papuan languages spoken in the interior[14]. This distinction had already been drawn by P.W. Schmidt in 1902, and although Gatti's study includes some Austronesian cognates, it is abundantly clear from Trombetti that he regarded it as an entirely distinct superfamily from Indo-Pacific.

Secondly, I note that Trombetti's lexical items drawn from Ray's list of 22 Papuan languages and Schmidt's list of a further 15 languages agree rather well with the word lists/reconstructions given by Foley for the Lower Sepik, Gorokan, Kainatu and Proto-Highlands families, as well as for his short list of Proto-Eastern Highlands-Proto-Australian cognates[15]. This presumably counts as solid evidence that the data from Ray and Schmidt that Trombetti and Gatti used was genuinely Papuan.

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[14] Glottologia, p. 68

[15] William A. Foley, The Papuan Languages of New Guinea, Cambridge, 1986, pp. 215-16, 246-8, 253-4, 257-8.

Foley lists a series of Proto-Eastern Highlands-Proto-Australian cognates. For those lexical items for which data is presented in Gatti, there is invariably a good match with Trombetti's data (Numbers follow Foley, op. cit. pp. 274-75)

FOLEY: PROTO-AUSTRALIAN/PROTO-EASTERN HIGHLAND

4. **EAT: PA** *ŋa-l, **PEH** *na; ***Gatti** *EAT-11: AUS 80 nannu, 20 nanni-ng, 19 ngannow;* ***Tasm Jorgensen*** *newinna;* ***GNG Poom*** *nona, nana*

7. **TWO: PA** *kuthara, **PEH** *tata; ***Gatti** *TWO-2: AUS 8/9/36/40 kootera, 10 kootara, 11 kootthura, 12 koodthera, 27/28/40 koothera;* ***BNG Kauralaig*** *kwásur,* ***Saibai*** *u-kasar*

9. **WATER PA** *ŋuku, **PEH** *nok(ami); ***Gatti** *WATER-9: AUS 52/74/75/81/85 nookoo, 30 nakka, 88 nuak, 32 ngook;* ***BNG Kauralaig/Saibai*** *nuki*

10. **DEAD PA** *puka, **PEH** *puti; ***Gatti** *DEAD-3: Aus 94 pooga, 88 pukka;* ***BNG Koiari*** *foge;*

11. **EYE PA** *mil (egg), **PEH** *mut; ***Gatti** *EGG-9 Aus 169 mor;* ***BNG Motumotu*** *mere,* ***Damara*** *muru;* ***EYE-2:*** *AUS 200 mer, 204/205/206 mir, 138 tee-murra;* ***BNG Mowat/Kiwai*** *damari*

13. **HEAD** PA *kata, PEH *ko(n)to; ***Gatti see HEAD-5***

FOLEY: PROTO-LOWER SEPIK (PLS)

FATHER: Foley does not reconstruct a proto-form but has Yimas apwi, Angoram apa/ano, Murik apa
Gatti - FATHER-3: AUS 133, 124 aboo, 120 abo-ri, 104 apa-ri, 106 apa-rie, 48 appa-ri; **BNG Kiwai/Miriam** aba, **Damara** abai, **Mairu** apai; **GNG Manikam** ab'u, **Bogadjim** abu, **Wenke** abe

WATER: PLS Arim
Gatti - RAIN-8: AUS 190 uroo, euro, 179 yuro, 181 yuro, yooroo, 187 yurra; **BNG Mowat** ueiri
Gatti - WATER-1: AUS 202 jarti-ni, 200 karti-n; **TAS Jorgensen** mocha karty

FIRE: PLS aw-r
Gatti - FIRE-12: AUS 38/39 oora, 38 oorra, 39 ooraa; **BNG Mowat/Kiwai** era, **Miriam** ur

STAR: PLS suŋkwi
Gatti - STAR-10: AUS 194 tingee, 84 dingi, 102 dingo; **GNG Augustafluss** tangui

TONGUE: PLS miniŋk
Gatti - TONGUE-6: AUS 91 moonim 95 mooni, 97 monee; **TAS Milligan** menné, **Milligan** mena, **Jorgensen** mena, **Lhotsky** mena, **Peron/Robert** mene; **GNG Bongu** muen, **Bogadjim** ming

TREE: PLS *Y(uw)an
Gatti - WOOD/TREE-12: AUS 190 ween, 207C/207I/207J, 208J win; **TAS Milligan** wiena, winna, **Norman** weenar, **Robert** ɯeena

BIG: PLS *(K)upa-
Gatti - LARGE-2: AUS 52 koba, gooba; **GNG Bogadjim** koba

Thirdly, despite little overlap between lexical items, there are some excellent matches between Trombetti's data and Whitehouse and Usher's Kusunda cognates, with the data of the former extending the analysis of the latter to Australian[16], although Timothy Usher, who spoke at the conference, seemed to be far more cautious about affirming the Indo-Pacific hypothesis than he was in his previous paper.

Evidently, the last word has yet to be said on the Indo-Pacific hypothesis, and it would be exceeding the brief of this essentially historiographic study to claim that Trombetti and

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FOLEY: PROTO-GOROKAN (PG)/PROTO-EASTERN HIGHLANDS (PEH)
MAN: PG *we, PEH *way
Gatti - MAN-7: AUS 39 wedea; BNG Motumotu vita
WATER: PG*no(k), PEH *nok(ami)
WATER-9: AUS 52/74/75/81/85 nookoo, 30 nakka, 88 nuak, 32 ngook; **BNG Kauralaig/Saibai** nuki
BREAST: PG *ami, PEH *(n)ami
BREAST-7: AUS 69A ama, 72 amma, 145 ammooa, 155/164/167 amoo, 171 ama, 190 amoo, 47/48/74/76/79/107/172/173 umma, 77 ummi, 170 ummoo
EAR: - PG*ke/a
EAR-1: AUS 193/194 koori, 191 gorai, 107 kurra; **BNG Kauralaig/Dabu** kaura
EAR-3: AUS 13 aka, 15 wooka; **TAS Robert** wegge; **BNG Dabu** ika
BLOOD: - PG *kola
BLOOD-1: AUS 106 kaluka, 87 koork, 88 korook, 107 kurooka; **BNG Kauralaig/Saibai** kulka
BLOOD-2: AUS 61 koorroo, 68 karro, 65 garoo, 67 garroo, 129 eer-gurra; **GNG Bongu** gaier, **Manikam** ker, **Bogadjim** kir
HAND: - PG *ya
HAND-7: AUS 179 yama, yumma, 185 yemmi, 186 yammar; **BNG Damara/Mairu** ima
EGG: PG *mut, PEH *mut
EGG-9 AND Béa ar-māūlo-da, **Púchíkwar** ár-múle-da, **Júwoi** rá-múle, **Kol** ta-mule-che, **Kédé** mulo; **AUS** 169 mor; **BNG Motumotu** mere, **Domara** muru
EGG-10 AND Bálé māūlāīch; **AUS** 199 mīrkoo, 19 morgoo, 206/207A/207B/207D/207G/207J/207K/208C/208G/208H/208I mirk, 207H merk
SUN: PG *po
SUN-4: AUS 120 potera; **TAS Lhotsky** piteri-na
SUN-5: AND Bále bāūdo, **Púchikwar** púte-da, **Júwoi** púte-, **Kol** pútē-che; **AUS** 152 bootoo, 154 boothoo, 158 boodoo ('**STAR**' in some 20 languages)
EAT: PG *na-, PEH *na-
EAT-11: AUS 80 nannu, 20 nanni-ng, 18 nana-ng, 19 ngannow; **TAS Jorgensen** newinna; **GNG: Poom** nona, nana
DIE: PG *puti-, PEH *puti-
DIE/DEAD-3: AUS 94 pooga (= **DEAD**), 88 pukka (cf. '**DEAD-2**'); **BNG Koiari** foge
DIE/DEAD-4: AUS 191 boe, 173 boo-ng; **BNG Damara** bau
TOOTH: Enga nege, **Kewa** agaa, **Dani** aik, **Ekagi** ego
TEETH-1: AUS 143 eak; **BNG Koiari/Eikiri/Koita/Favele** egi

[16] Whitehouse, P., Usher, T., Ruhlen, M.: Kusunda: an Indo-Pacific language of the Himalayas, PNAS, Vol. 101, No. 15, pp. 5692-95.
1. **Kusunda FATHER** məm and **FATHER-5** above; 2. **Kusunda SHORT** potoə, **Gatti SMALL** Aus 16 poton, 19 bottene, 25 botine; **GNG** 1 pitine; **3. Kusunda DAYLIGHT** jina ïkya, **Gatti SUN** Aus 74 ooko, And Önge 9 éké; **4. Kusunda BREAST** ambu = **Gatti BREAST** Aus 69A ama, 72 amma, 145 ammooa, 155/164/167 amoo, 171 ema, 190 amoo, 47/48/74/76/79/107/172/173 umma, 77 ummi, 170 ummoo; **5. Kusunda EGG** gwá/góä poss. link to **Gatti EGG** Aus 107 kookurry, kokarri; **BNG Kauralaig, Saibai** kakur, **GNG Poom** kókoile-madeine; **6. Kusunda DOG** agai poss. link to **Gatti DOG** Aus 113 kia, 115 kāyā, 110 kai-a, 116 gyai; GNG Hatzfeldhafen ké

Gatti had already proven it a century ago. I nevertheless believe that the evidence I have presented shows that they deserve to be recognised as the first to formulate such a notion.

DATA SET

1. ANDAMANESE-PAPUAN-AUSTRALIAN COGNATES
-Numbers for Australian languages refer to Curr's classification (listed below)
-Underlined entries are examples of prefixing in Australian languages.

FATHER-1: AUS 107 tata-nya/thata-nya; **TAS Jorgensen** tata-na; **BNG Kauralaig/Saibai** tuti
FATHER-2: AUS 120 babai, baby, 163 babo-n, 164 bobbi-n/baboo-n, 167 boba, 168 booba, 169 babo, 176 booba, 181 buba, 183 buba, baba, 190 babi-n, 192 babu-na, babu-una, 115 bob-ng, 198 baba ('pape' type also frequent)
FATHER-3: AUS 133, 124 aboo, 120 abo-ri, 104 apa-ri, 106 apa-rie, 48 appa-ri; **BNG Kiwai/Miriam** aba, **Damara** abai, **Mairu** apai; **GNG Manikam** ab'u, **Bogadjim** abu, **Wenke** abe
FATHER-4: AUS 42 meeya; **BNG Kupele** moia
FATHER-5: AND Bálé mámá, **Béa** mám-ola (**MOTHER-IN-LAW**); **AUS** 10/190/213 mama, 9/12/25/27/28 mamma, 23/31 mam, 34/40 mumma, 199, māmoo, 201 maamo, 202/203 mamai, 204 maame, 206/207A, 207E maam, 209B maama, h207B/207F/207G/207H/208E mami, 21/22 mama-n, 16/17/19/40 mamma-n, 18/20/24/26/30 mammo-n, 208G maami-n, 209D mamo-n, 29 mama-tha; **BNG Koiari/Eikiri/Koita** mame, **Kupela** mama; **GNG Kai** mama, **Bougu** mem
FATHER-5A: AUS 204 miami-k, 208H mamoo-k; **BNG Maiari/Favele** mama-ka
FATHER-6: AUS 45 neia; **BNG Meroka** noia
MOTHER-1: AND Béa chána-da. **AUS** 25/32/33 kun, 201 konoo, 190 gunnee, gunnie, koo-nee, koonea, goonee, gunnee, goonee, koonee, gooni, 6 in-genoo
MOTHER-2: AND Kol aute-tu-nen; **AUS** 159 too
MOTHER-3: AND Kédé mémí, **Cháriár** ta-mémí (cf **MILK-2** and **FATHER-5**)
MOTHER-4: **AUS** 39 mea, 38 meeya/meea; **BNG Kiwai** mau; **GNG Varopu** mo (cf. **FATHER-4**)
MOTHER-5: **AUS** 60 amię, 72 ami, 102 ama, 104 amma, 113 amoo, 133 ammu, 105 amo-ri, 111 amo-ng; **BNG Kauralaig/Saibai** ama, **Miriam** amau; **GNG Bongu** am (cf **FATHER-4, FATHER-5**))
MOTHER-6: **AUS** 164 abo-n; **BNG Kauralaig/Saibai /Miriam** apu (cf **FATHER-3**)
MOTHER-7A: AUS 185 ŋukar, 87 ngaak, 187 niga; **BNG Manukolu** noka
MOTHER-7B: AUS 15 nonga-n, 26 nunga-n; **GNG Kai** noka
MOTHER-8: AND Júwoi nāū-lekile (see **WIFE**)[NB this suffix very common in **Júwoi**]; **AUS** 188 naae, 55 noa, 46 nooa (**WIFE**); **BNG Kupela, Meroka** neia, **Motumotu** nou; **GNG Valmau** nue, **Hatzfeldhafen** nana, **Wenke** nyan
MOTHER-9: AND 4 in, 6 in-da, 8 in-le; **AUS** 152 yuna, 52 unu; **BNG Koiari** ine;
MOTHER-10: AUS 163 yą, 165 ya, yoo, 160 yaya; **BNG Dabu** yai
WOMAN-1: **AUS** 40 kare, 120 kolokolo; **GNG Manikam** gali
WOMAN-2: AND Bálé áb-cháu-pal; **AUS** 102 kooberrro (negress);
WOMAN-3: AND Béa áb-cháu-da [see **MOTHER**]; **AUS** 162 keen,
WOMAN-4: AUS 176 tamma; **GNG Arop** tamin
WOMAN-5: AND Kédé eb-buku, **Cháriár** lāō-buku; **AUS** 43 boku, 45 bookoo; **BNG Kauralaig** i-pikai;
WOMAN-6: AND Béa áb-pāil-da, **Bálé** áb-pail (see **WIFE-3**); **AUS** 207E pulle-pulle, 197 balla-n
WOMAN-7: AND Púchíkwar áb-ob-da, **Júwoi** á-ú-lekile **Kol** e-op-che (see **WIFE-4**); **AUS** 164 abo-n (**MOTHER**), 170 oopar (**WIFE**);
WOMAN-8: AUS 89 majooa, 90 maho, 94 magoo, 177 muggee, 182 mooki-n; **BNG Koiari/Eikiri/Koita/Favele/Kupele/Meroka** magi
WOMAN-9: **AUS** 156 mia-a-ra, 214D marrai; **BNG Dabu** mure
WOMAN-10: **AUS** 160 woorroo; **BNG Tumu** wor
WOMAN-11: **AUS** 189 nuka-l, 92 nok-nok; **GNG Kai** nagoa, noga, **Poom** naga, niga, **Valmau** nigi (see **MOTHER-7**)
WIFE-1: **AUS** 17 kourta, 18 kardo, 19/20/22/30 korda, 23 koori, 24 kordo, 32 koart; **TAS Milligan** kroatta, langunya
WIFE-2: **AUS** 120 gain, 124 ken; **TAS Peron** cuani (see **MOTHER-1, WOMAN-3**)

WIFE-3: **AUS** 133 perro; **AND Béa** áb-pāil-da, **Bálé** áb-pail (see **WOMAN-6**)
WIFE-4: **AUS** 170 oopar; **BNG** 31, **Saibai** ipi, **Mowat** upi (see **WOMAN-7**)
WIFE-5: **AUS** 214D marrai, 168 mirru; **BNG Dabu** mura
WIFE-6 AUS 55 noa, 46 npoa, 188 naae (**MOTHER**); **GNG Bogadjim** nau (see **MOTHER-8**)
MAN-1: AUS 46 kanna; GNG Valmau kónu
MAN-2: AND Púchíkwar kāūro-da; **AUS** 185 koari, 186 korry, 187 korri, 188 kurri, 206/207G/208H koole, 207H kooli, 208J koday; **BNG Saibai** gara (boy), **Toaripi/Motumotu** karu (**MAN**); **GNG Valmau** kôl
MAN-3: AND Béa áb-chābil (having wives); **AUS** 136 kabulla, 179 gibberra, 164 gibere
MAN-4: AND Kédé é-tairu, **Cháriár** e-táru; **AUS** 60 thura, 61/62 tura
MAN-5: AND Béa búla-da, **Bálé** búla; **AUS** 181/190 boori; **BNG Elema** bira
MAN-6: **AUS** 68 binna; **TAS Jorgensen** penna
MAN-7: **AUS** 39 wedea; **BNG Motumotu** vita
MAN-8: AND Béa áb-wára-da (bachelor); **AUS** 176 woori-n
MAN-9: **AUS** 137 nema; **GNG Kadda** nomú
CHILD-1: AND Béa áka-kádaka-da, **Bálé** áka-koádoko, **Púchíkwar** ó-kádaká-da, **Júwoi** oko-kádaká, **Kol** ó-kadaká-che; **AUS** 100 kuttukka
CHILD-2: AND Cháriár ċhóté; **AUS** 53 kidtha, 196 goodtha, 182 kootha-ra
CHILD-3: AND Kol á-t're-che, **Bójigiáb** ab-tiré, **Kol** e-tirá, **Önge** é-tire; **AUS** tuli, 186 talli, 210 tally-leet, 180 talli-waku (children)
CHILD-4: **AUS** 159 bobo, 190 boobi, 138 pamboo-na; **GNG Kadda** bombe
CHILD-5: **AUS** 190 boori, 167 barree, 174 aam-burri, 205 –boole, 146 bullo, 149 bolloo; **BNG Elema** bari, **Evorra** pōri
CHILD-6: **AUS** 12 yamba; **GNG Augustafluss** yemab
CHILD-7: **AUS** 14 body, 102 pitta; **TAS Jorgensen** bada-ny(') [very frequent in the languages of Tasmania, is a suffix characterised by a nasal].
CHILD-8: 102 merri, 187 marria, 104 merri-lai; **BNG Mowat/Kiwai** mere
CHILD-9: **AUS** 11 mieu; **GNG Varopu** ma
CHILD-10: **AUS** 124 nunga, 114 ngunga; **GNG Anal** ninke
CHILD-11: **AUS** 174 andoo, 158 undoo, 174 andoono; **GNG Arop** antón
BROTHER-1: AND Púchíkwar ar-chúlutú-da, **Júwoi** rá-chúlútu **Kol** áke-chúlutú; **AUS** 28 koorda, 36 quertea
BROTHER-2: AND Béa ár-dóáti-da, **Bálé** ar-doto; **AUS** 159 dutha, 167 dooda, 181 daidi, theady, tiade 102 theti, 194 tatha, 205 date (younger **BROTHER**), 103 tita, 105 titi
BROTHER-3: AUS 209B baangain, 187 bingai, 188 binghi, 185 bingi; **TAS Milligan** peegennah
BROTHER-4: AUS 47 nuție-nutiem 45 nooto, 42 noota, 46 naata-tta; **TAS Milligan** nietta mena
SISTER-1: AND Béa ár-dóati-dar, ár-doti-t; **AUS** 205 date, 207P tati
SISTER-2: AND Púchíkwar á-chuletú-da, ra-chûletu, á-chúletú-n; **AUS** 24 quaret chukán, 33 quarrutchook
OLD MAN-1: AND Púchíkwar áb-kára-da; **AUS** 69A karoo, 50, 51 kurroo, 141 kyerra, 52 kooroo, 155 kiara, 181 kure, 140 kaera
OLD MAN-2: AND Béa áb-búla-da, Bálé áb-búla: **AUS** 97 boolgin-boola, 59 bool-ka, 60/61/62 pool-ka
OLD MAN-3: AND Béa, Bálé áb-chāūraga-da [NB: the āū represents a long ō]; **AUS** 162 goorki, girki-l
LAD-1: AND 1 aka-kadaka-da; **AUS** 173 gadekoo-rr
COMMANDER/CHIEF: AND Béa áb-maiola; **AUS** 89 moolia, 101 moola
WHITE MAN-1: AUS 137 yarabu; **AND Béa** ólowia-da
GOD-1: AND Béa púlúga-da, **Kédé** bilke, **Cháriár** bilek-che, **Púchíkwar** bilik-da, **Júwoi** bilak-, **Kol** bilak-che; **AUS** 89 pargi-gi
BLOOD-1: AUS 106 kaluka, 87 koork, 88 korook, 107 kurooka; **BNG Kauralaig/Saibai** kulka
BLOOD-2: AUS 61 koorroo, 68 karro, 65 garoo, 67 garroo, 129 eer-gurra; **GNG Bongu** gaier, **Manikam** ker, **Bogadjim** kir
BLOOD-3. AND Béa téi-da, **Kédé** te-yi, **Cháriár** é-té, **Bálé** té, **Bójigiáb** te-wa, **Púchíkwar** teura-da, **Júwoi** tewa-, **Kol** tewa-che; **AUS** 163/165 dee, 163 du, 159 ar-tee, 158 aar-tee; **GNG** so
STOMACH-1 AUS 109 gippa, 120 kippa/keppa, 124 keepa; **BNG Saibai** kupa; **GNG Bongu** kueba
STOMACH-2: AND Púchíkwar chúta-da, **Júwoi** chute, **Kol** chúte-che; **AUS** 190 gida-u, 77 koonto
STOMACH 3: AND Bójigiáb é-chulu; **AUS** 124 keela, 5 gooro, 129 ya-goora

STOMACH-4: **AUS** 33 koolge, 118 koolko; **GNG Wenke** gulegim
STOMACH-5: **AUS** 164 doon; **TAS Milligan** teena, teenah
STOMACH-6: **AUS** 190 daddo, 180 thethia (in 110 means 'excrement'); **BNG Eikiri/Maiari/Favele** dedu
STOMACH-7: **AUS** 176 dikki, diga, 170 diggo-ri, 190 ttugga 'excrement'; **BNG Koita** deka
STOMACH-8: **AUS** 142/147/151/131/132/194 banni; **BNG Damara** benu
STOMACH-9: **AUS** 98 botho, 186 bittu-n, 209B boet, 214B/214D botha; **GNG Kai** fusuu, **Poom** pusú
STOMACH-10: **AUS** 207C poll-o-in; **TAS Norman** plōner
STOMACH-11: **AUS** 102 manno; **GNG Bogadjim** mené
STOMACH-12 AUS 179 makki, 178 moikue, 140 machi; **GNG Bogadjim** magi-li
STOMACH-13 AUS 7 maita; **BNG Saibai** maita
STOMACH-14 AUS 64 nyeeree; **BNG Kiwai** niro
EYE-1: AND Béa i-dal-da, **Bálé** i-dal, **Kédé** er-tol; **AUS** 114 dily, 9/10 toola (NB 50 languages)
EYE-2: AUS 200 mer, 204/205/206 mir, 138 tee-murra; **BNG Mowat/Kiwai** da-mari
EYE-3: AUS 201 maingo, 202 mingi, 203 maingi; **TAS Milligan** mongté-na
EYE-4: AND Chériar er-ulu; **AUS** 92 ale
FOOT-1: AUS 208C kar, 208H kaar, 179 garra, 199 kero, 207D karri, 213 gerra, 7 i-quara; **BNG Evorra** hari; **GNG Varopu** karo
[Also **AUS** 149 kaal [thigh]; **GNG Valmau** kayal
FOOT-2: AUS 179 gidda; **GNG Kelana-Kai** kiese
FOOT-3: AUS 132 teera; **BNG Kauralaig** tira
FOOT-4: AUS 121 tinna [v. widespread]; **BNG Kauralaig/Saibai** san
FOOT-5: AND Júwoi tok, tāūk-che; **AUS** 108 takko; **BNG Kabana** suge;
FOOT-6: AUS 181 booro, 181 purru; **BNG Elema** boro, **Motumotu** bera
FOOT-7: AND Béa pág-da, **Bálé** póág-da; **AUS** 159 bogar
FOOT-8: AND Önge mugé; **BNG Dabu** mak; **AUS** 1 macka, 96/99/130 mago, 100 mukko, 174 moko;

FOOT-9: **AUS** 10 wata, 63 weeta; **BNG Kupela** veto, **Eikiri/Koita** vasi
FOOT-10: **AUS** 119 wugga, 120 wakka; **BNG Maiari/Favele** vahi
FOOT-11: **AUS** 11 woolo; **BNG Meroka** velo
FOOT-12: **AUS** 46 noora, 110 narir [thigh]
FOOT-13: **AUS** 13, 15 ena; **GNG Hatzfeldhafen** inini
FOOT-14: AND Bójigiáb óng-ta; **AUS** 38/39 inga, 37 inka/inniga
FOOT-15: AUS 5 locko; **TAS Milligan** lugga-na
BONE-1: AUS 37 ku/on-kuna; **BNG** 49 kunia, 37 on-koona
BONE-2: AUS 93 orkur, 167 geera, 107 chiora, 176 gulloo; **GNG Hatzfeldhafen** akarer
BONE-3: AUS 189 dirrel; **GNG** surle
BONE-4: AND Béa ta-da, **Bálé** tóá, **Púchíkwar** tāū-da, **Júwoi** tau-, **Kol** tau-che, **Kédé** e-tu-we, **Chériár** étoi-i; **GNG Kai** sie; **AUS** 140 toa, 159 deea, 169 dea
EAR-1: **AUS** 193/194 koorj, 191 gorai, 107 kurra; **BNG Kauralaig/Dabu** kaura
EAR-2: **AUS** 56 kutjera; **BNG Kabana** gadaro
EAR-3: **AUS** 13 aka, 15 wooka; **TAS Robert** wegge; **BNG Dabu** ika
EAR-4: AND Béa il-póko-da, **Bálé** id-poku, **Púchíkwar** ir-bó-da, **Júwoi** ré-bāūkāū, **Kol** er-bóke-che, **Kédé** ér-bu, **Chériár** ér-buáh; **AUS** 37 i-bagi-ta, il-poki-ta, 38 il-poca-rta, ill-pocke-rta, 39 il-pucki-ta; **BNG Eikiri** i-piko, **Koiari** i-fiko, **Koita, Favele** i-hiko, etc.
EAR-5: **AUS** 187 moko; **GNG Valmau** mukuôl
HAIR-1: AUS 128 kudda, 127 kudtha, 147 kutta, 131 kutty, 140 katta, 145 kata (=head); **TAS Jorgensen** cetha-na, **Lhotsky** ziti-na; **GNG Poom** hōdo
HAIR-3: **AUS** 19 katta mungarra, 24/19 kata mungia (leaves of head), 24 has only mungar; **GNG Bongu** gate bagari, **Bogadjim** kate bangar
HAIR-4: **AUS** 144 boona; **TAS Milligan** poina
HAIR-5: **AUS** 11 popa, 177/203 pope; **BNG** ? pepe
HAIR-6: AND Béa pich-da, **Bálé** pich-da, **Púchíkwar** pāīch-da, **Kol** pāīch-che, **Kédé** paitch, **Chériár** paitch; **AUS** 180 bookia, 214A pōk-kan.
HAIR-7: AND Önge māūdé; **AUS** 6 moder;
HAIR-8: AUS 167 ma, 176 mo, 108 mea; **BNG Mowat** muo
HAIR-9: AUS 130 yolli, 151 yayli, 150 ail

HAIR-10: AUS 190 ura-n, woora-n, oura-n, oora-n, urun, our-n, 47 wirrie, 125 weir, 129/137/138/155 wooroo; BNG **Domara/Mairu** uru; GNG **Valmau** vóruen
HAND-1: AUS 30 katta; BNG **Kauralaig** gêt, **Saibai** getö
HAND-2: AND **Béa** ón-kāūro-da, **Bálé** óng-kāūro, **Púchíkwar** óng-kāūra-da, **Júwoi** āūn-kúrāū-, **Kol** ón-kāūre-che, **Kédé** ám-koro; AUS 1 queear-warra, 162 gillee
HAND-3: AUS 7 ata; BNG **Koiarai/Eikiri/Koita/Maiari/Favele/Kupele/Meroka** ada; GNG **Varopu** aüto
HAND-4: AUS 164 biri, berree, birre, 163 birroo; GNG **Manikam** bar
HAND-5: AUS 91/123/127/142/143/150 malla; 95/114/117/121/124/128/131/144/145/147/151 mulla; GNG **Poom** male
HAND-6: AUS 15/27/169/175/181 ma; BNG 39/ **Motumotu** mai; GNG **Kai/Poom** me
HAND-7: AUS 179 yama, yumma, 185 yemmi, 186 yammar; BNG **Damara/Mairu** ima
HAND-8: AUS 159 na; TAS **Robert** nuna
HEAD-1: AUS 48 koka, 50 kooka, 63/64 kaka, 65 koku-lli, 66 kocke-rli, 67 kakka, 181 koka; TAS **Peron** cuegi; BNG **Mowat** kwiku, **Saibai** kuikö
HEAD-2: AND **Bálé** ót-chęktá; AUS 66 kockerti
HEAD-3: AUS **161/162 karm;** BNG **Miriam** kérém
HEAD-4: AUS 181 kar, 127 kowro, 145 koori; GNG **Poom** horo
HEAD-5: AND **Béa** ót-cheta-da; GNG **Bongu** gate, **Manikam** kadi, **Bogadjim** kate; AUS 18/19/20/30/123/133/142 katta, 22/141/147 kutta, 24 kata, 16 cata, 31 kaat, 122 kida, 123 kudda, 131 kutha, 132 katha, 144 kada, 158 kuddo, 61 a-kartee
HEAD-6: AND **Kédé** erchų; AUS 152 ulkey
HEAD-7: AUS 155 toogoo, 110 toka-l; BNG **Varopu** taigu
HEAD-8: AUS 60 mieroo, 101 moola, 89 moolia; BNG **Damara/Mairu** moru
HEAD-9:AUS 204/206/207A boorp; TAS **Jorgensen** pulbea-ny
HEAD-10: AUS 7 pada; TAS **Jorgensen** poieté
HEAD-11: AUS 100 nawgool; TAS **Norman** neugolar
MOUTH-1: AUS 210 gaat; BNG **Kauralaig** guda, **Saibai** gudö, **Toaripi** arra-katta, **Evorra** aro-carta, **Tumu** arra-cotta
MOUTH-2: AUS 115 kunna, 190 kuine; TAS **Jorgensen** canea, **Robert** cani-na, **Milligan** kaneinah
MOUTH-3: AND **Béa** ákan-tewi, **Bálé** ákan-tewi, **Púchíkwar** óm-tewe, **Júwoi** āūkom-tewi, **Kol** óm-tewe; AUS 114 thowa, 138/140 towa, 129 dthowa
MOUTH-4: AUS 19/21 daą, 24/28/128/134/151 da, 124/127 dtha, 11/23/30/33/122 ta, 16/31 taa, 151 tia, 52 thua, 133 tu; BNG **Miriam** te, **Elema** tau
MOUTH-5: AUS 164,167 tamboor; GNG **Wenke** zambu
MOUTH-6: AUS 32 dami-l; GNG **Augustafluss** samoa
MOUTH-7: AUS 55 muna, 84 munno, 143 moonoo, 149 munno, 155/156 moonoo, 190 meein, 106 bina; TAS **Seatt** moona-pena
MOUTH-8: AUS 57 mangą, 175 mygh; TAS **Jorgensen** mongui
MOUTH-9: AUS 98/118/119 unda; GNG **Augustafluss** undi
NOSE-1: AND **Béa** chāūronga-da; **Bálé** chaurnga-; AUS 207B karnook
NOSE-2: AND **Púchíkwar** kāūté-da, **Júwoi** kāūte-, **Kol** kāūte-che, **Bójigiáb** mir-katto; AUS 117 kooda, 114 kootha
NOSE-3: AUS 103 tirki otuki; GNG **Kai** sake, soke, **Poom** sake
NOSE-4: AUS 160 piree; GNG **Miriam** pit, **Kauralaig/Saibai** piti
NOSE-5: AUS 1 moodtha, 14 mutter, 13/15 mootha; TAS **Milligan** mude-na
NOSE-6: AUS 169 mia, 167 mii; TAS **Milligan** muye
NOSE-7: AUS 92 owoo; GNG **Varopu** úvo
NOSE-8: AUS 185 ammoro (NB the form mooro is very widespread); BNG **Motumotu** mira
NOSE-9: AUS 187 nak, 100 nykar, 191 nogur; BNG **Mairu** noga
NOSE-10: AUS 124,146 ooroo, 134 urroa; BNG **Koiari/Koita** uri
SKIN-1: AND ót-kāūpó, ót-kobau; AUS 161 kooba, 164 koba-ra, 166 kubari
SKIN-2: AUS 164 goure, 135 coorarоo, 186 kooroo/gorro-n, 7 i-kora; GNG **Bongu** gare
SKIN-3: AUS 159 tome; BNG **Kiwai** tama
SKIN-4: AUS 89 tarara, 170 moyen; TAS **Milligan** tarra meenya

SKIN-5: AUS 115 pūrră, 38 polla, 37 poola, 84 pulle, 37 e-polla; **BNG Kauralaig/Saibai** pura, **Miriam** paur
SKIN-6: AUS 139 binna; **BNG Mowat** pauna
SKIN-7: AUS 15 opai; **BNG Domara** ofi, **Mairu** obi
SKIN-8: AUS 82 palthu, 77 pelta, 72 palta, 78/80 pulta; **GNG Valmau** paltogo
TONGUE-1: AND Kédé koi, **Cháriár** koi; **AUS**: 130 kaae
TONGUE-2: AUS 129 kookanya, koogunya, 138 kookunya; **TAS Milligan** kayena (see TONGUE-1)
TONGUE-3: AND Béa áka-tegi-da, **Bálé** áka-tegi, **Púchíkwar** ó-teke-da, **Júwoi** āūkāū-teke-, **Kol** āū-téki-che, **Önge** áka-teku, **Cháriár** áka-teku; **GNG Augustafluß** tega-l; **AUS** 207E thage
TONGUE-4: AND Béa áka-étal-da, **Bálé** áka-atal, **Púchíkwar** ó-tatal-da, āūkāū-tatal-, **Kol** tatal-che; **AUS** 16 tallan, 19 dallan, 158 dalli, 174 talle (v. widespread); **TAS Jorgensen** tullana
TONGUE-5: AUS 159 dan, 161 doonan; **GNG Augustafluss** taueng
TONGUE-6: AUS 91 moonim 95 mooni, 97 monee; **TAS Milligan** menné, **Milligan** mena, **Jorgensen** mena, **Lhotsky** mena, **Peron/Robert** mene; **GNG Bongu** muen, **Bogadjim** ming
TONGUE-7: AUS 39 allinya, 38 allinya; **GNG Kai** elong
TEETH-1: AUS 143 eak; **BNG Koiari/Eikiri/Koita/Favele** egi
TEETH-2: AUS 179 gia; **BNG Maiari** gi
TEETH-3: AUS 111 oo-kool, 151 gulla; **GNG Valmau** ayokol
TEETH-4: AUS 42/45 yakkara, 47 yackarra; **TAS Milligan** wugherri-nni
TEETH-5: AND Béa tóg-da, **Bálé** tóg-; **AUS** 53 tiga, 167 ding, 169 deang
TEETH-6: AUS 177 yeta; **BNG Kabana** ado
TEETH-7: AUS 115 tirrā 154 teera, 168 tur, 180 teeria, 182 thirra, 185 tirru, 187 tirra, 163/165 deera, 176 dirra, 191 darra, 214A dīr-ra, 37 ar-tita, 38 ar-teeta, 39 ar-deeta; **BNG Miriam** sara
TEETH-8: AUS 106 den; **BNG Kauralaig/Saibai** dan
TEETH-9: AUS 85 taraki-n; **BNG Miriam** tereg
TEETH-10: AUS 67 tea, 68 tia, 170 deea; **BNG Toaripi/Elema** tau, **Motumotu** tau
TEETH-11: AND Puchikwar péla-da; **AUS** 152 pirra
TEETH-12: AND Önge mákúe; **AUS 8** meeku-rro
TEETH-13: AUS 112 marra-marra, 102 millea; **GNG Wenke** mara
TEETH-14: AUS 148 neera; **BNG Evorra** niri
TEETH-15: AUS 190 yinna; **TAS Lhotsky** yana, **Jorgensen** yanna
TEETH-16: AUS 199 līanŋoo; **TAS Norman** leeanner
BREAST-1: AND Béa kám-da, **Bálé** koam, **Bójigiáb** ir-kam-da; **AUS** 158 kammoo, 178 ngania
BREAST-2: AND Cháriár ot-char; **AUS** 109 coyar, 207H koroo-m, 207G kor-n, 207H koroom, 60 oo-kooroo
BREAST-3: AUS 190 bere, 181 berry, 190 birri-n, etc., 213 berre, 214A baī-ít, 214C bai-īr
BREAST-4: AUS 103 beriko, 201 bark, 186, 209B birring; **TAS Milligan** parugga-nna
BREAST-5: AUS 210 mooi; **GNG Augustafluss** mu
BREAST-6: AUS 102 muna; **GNG Bongu** mine
BREAST-7: AUS 69A ama, 72 amma, 145 ammooa, 155/164/167 amoo, 171 ama, 190 amoo, 47/48/74/76/79/107/172/173 umma, 77 ummi, 170 ummoo
INTESTINES-1: AUS 208C toorekoona (guts); **TAS Milligan** tiacrakena
BEARD-1: AUS 24 knunga, 19 knanga; **TAS Peron** kangi-ne
THIGH-1: AUS 43/47/56/107/123/140/146/150/190 tarra, 52/55/124 thora, 177/120 tharra, 53/185 thurra, 99 tharro dara, 103/133/138/156/177 tara, 193 turra, 148/158/165/183/196/197/155 daria; **TAS Lhotsky/Jorgensen** tula
THIGH-2: AUS 51 bil-gurra; **TAS Jorgensen** pegara
THIGH-3: AND Béa pāīcha-da, **Bálé** pōōicho; **AUS** 190 bugu
DOG-1: AUS 94 koodoo, 15 hotther; **TAS Seatt** kuayatta
DOG-2: AUS 186 kooko; **BNG Tumu** kaukou
DOG-3: AUS 69A koonoo, 69 koonia/kunnya; **BNG Manukolu** gone
DOG-4: AUS 113 kia, 151 kāyā, 110 kai-a, 116 gyai; **GNG Hatzfeldhafen** kē
DOG-5: AUS 128 ooda, 126 oodoodoo; **BNG Domara** out
DOG-6: AUS 210 baan, baain, 212 baan; **TAS Milligan** panoi-né; **GNG Bogadjim** baun
DOG-7: AUS 56 puruina; **GNG Valmau/Arop** pelen
DOG-8: AUS 175 ware, 117/11 woora; **GNG** ? uă'ra

DOG-9: AUS 170 mee, 181 myi; **GNG Wenke** mama
FISH-1: AUS 102 kpbi, 104 koopi, 105 koppi; **GNG Bongu** kaib
FISH-2: AUS 107 kammoo, 115 kūmmă; **GNG Bongu** guman, **Manikam** goman, **Augustafluss** kami
FISH-3: AUS 40 kooya, 41 kuya, 50 kooa, 110 kooea, 119 kooia, 133 koio; **GNG Bogadjim** γe
FISH-4: AND 7 takejéu; AUS 175 tukkai, 141 duge-ra
FISH-5: AUS 118 taboo; **BNG Elema** tava; **GNG Kelana-Kai** sabon
FISH-6: AUS 163 daam; **GNG Kamoka** ŏ-som
FISH-7: AND **Béa** yat-da; AUS 156 yedi
FISH-8: AND **Chárіar** ji; AUS 170 joo-n
FISH-9: AUS 109 poteea; **BNG Dabu** pudi
FISH-10: AUS 34/35 moody; **BNG Kabana** mada, **Manukolu** mata
FISH-11: AUS 7 wappi, 18 wappie, 16 web; **BNG Kauralaig/Saibai** wapi
FISH-12: AUS 207K yoori; **GNG Augustafluss** yarra
FISH-13: AUS 2 li-yer; **BNG Miriam** lar
FISH-14: AUS 175 naloor; **GNG Anal** nil, **Kai** ngala, **Hatzfeldhafen** ngalin(') [NB guttural nasal]
FLY-1: AUS 124 koo-roo-moo; **BNG Dabu** a-kuraimi
FLY-2: AUS 27 booara, 69 il-burra, il-beru; **BNG Kauralaig/Saibai** buli
FLY-3: AUS 15 weale; **TAS Jorgensen** weealee-na
FLY-4: AND **Béa** búmila-da, **Bálé** búmulá; AUS 183 boomal
FLY-5: AND **Chárіar** pulimu, AUS 190 booreema, 197 borema-n
FLY-6: AUS 129 marbu-l; **BNG Tumu** mŏrapo
FLY-7: AUS 104 mooki; **BNG Kai** maka
FLY-8: AUS 127/144 ninga, 130 nunga, 133 nenga; **BNG Bongu** niniga
FLY-9: AUS 205 ulul, 189 yulla, 164 oro-oro, 11 warri, 12 worrie; **TAS Peron** oille, **Jorgensen** oelle
MOSQUITO-1: AUS 8 kopnai, 46 koinyee; **BNG Koiari** kunia; **GNG Bongu** kain, **Manikam** kän
MOSQUITO-2: AND **Béa** teil-da, **Bálé** tel, **Púchikwar** tél-da, **Júwoi** tel-, **Kol** tel-che, **Kédé** téil, **Chárіar** téil, **Bójigiáb** téil; AUS 191 doo-ra
MOSQUITO-3: AUS 165 moongoroo, 149 mingur; **TAS Norman** mōkerer
MOSQUITO-4: AUS 25 nooat, nodda, 19 needo; **BNG Kiwai** nati; **GNG Kai** nusu
MOSQUITO-5: AUS 45 eni; **BNG Koita** una
SNAKE-1: AUS 194 kurri; **BNG Toaripi** karora, **Motumotu** i-karoa
SNAKE-2: AND **Púchíkwar** chúpe-da, **Júwoi** chúpe-, **Kol** chupē-che; AUS 115 kōpē, 121 kobbu-l, 144/157 caboo-l, 150/170 kabod
SNAKE-3: AUS 102 kutti, 107 kadi; **TAS Lhotsky** kata-l
SNAKE-4: AND 9 tómógui; AUS 190 thanogie
SNAKE-5: AUS 165 tuppoo; **BNG Saibai** tabu, **Dabu** dibe, **Kiwai** topo
SNAKE-6: AUS 196 mukka, 99 mokoa; **BNG Elema** maka
SNAKE -7: AUS 121 mooda; **GNG Hatzfeldhafen** mat
SNAKE-8: AUS 164 moollpo; **GNG Bongu/Manikam** mal, **Bogadjim** a-mal
SWAN-1: AUS 163/165 goloin, 187 koolwanuk, 166 kulun; **TAS Milligan** kélangūnya
WHITE COCKATOO-1: AUS 28 ngawarra, 13 y-nawara, 189 nooal, 197 ngoul, 194 ngowal; **TAS Milligan** nghara, **Robert** ngara-na
PELICAN-1: AUS 153 barda, 107 tarta, 106 turta, 177 tarta; **TAS Lhotsky** trude-na, **Jorgensen** trewdi-na
EMU-1: AUS 87 rungin, 85 rangun, 84 ranganyu; **TAS Jorgensen** rekuna
LOBSTER-1: AUS 179 noloa-n, 175 nola-ka; **TAS Jorgensen** nuele
PRAWN-1: AND 4 kuk; AUS 165 kaki-ne
PRAWN-2: AND **Béa** wáka-da, **Púchikwar** waka-da, **Júwoi** wáká-, **Kol** wákāī-che; AUS 76 wegi-ga
DUCK-1: AND **Béa** kúlāla-da, **Kédé** kúlāl-da, **Púchikwar** kúlāl-da, **Júwoi** kúlāl-, **Kol** kúlāl-che; AUS 8 kooleyalli
LIGHT-1: AND **Béa** ar-chál-da, **Bálé** ár-chal, **Púchíkwar** ar-chol-da, **Júwoi** rá-chol-, **Kol** tu-chol-de (sunshine); AUS 176 gilli, 140 garra, 163 kirree, 205 karo
LIGHT-2: AND **Kédé** diö; AUS 175 dei, dooegi; **BNG Mowat** duo
LIGHT-3: AUS 190 wannee, 208B win; **BNG Eikiri/Koita/Maiari/Favele/Kupele/Meroka** vani
LIGHT-4: AUS 128 oona, 130 unno; **TAS Robert** una-menina
LIGHT-5: AND **Bójigiáb** pute; AUS 52 bitta
LIGHT-6: AND **Bálé** ár-lid-wálaīch; AUS 210 werrook

DARK-1: AUS 170 kuppee, 186 koombar; **BNG Miriam** kupi-kupi, **Saibai** kubil
DARK-2: AUS 197 kata-ta; **BNG Miriam** kut
DARK-3: AUS 202 kolli, 150 koora, 136 kari, 150, 123 karie; **BNG Mairu** galu
DARK-4: AND Púchikwar direk-da, **Júwoi** dirak-, **Bójigiáb** ti-li-dirik, **Cháriár** tibi-dirik
DARK-5: AND Kol pāūti-che; **AUS** 53 bitha-n
DARK-6: **AUS** 12/29/48 muro, 74 mala-ra, 205 mala-ra, 205 mola, 104 u-malo; **BNG Motumotu** muru-muru
DARK-7: AUS 199 wooka; **BNG Dabu?** weeker
EARTH/LAND-1: **AUS** 148/149 kappa, 110 gobo; **GNG Augustafluss** kob
EARTH/LAND-2: AND Béa gara-da, **Bálé** goárada; **AUS** 179 garra, 82 karra
EARTH/LAND-3: **AUS** 129 goondee/koondi, 138 kundi; **TAS Lhotsky** gonta, **Jorgensen** gunta
EARTH/LAND-4: AND Önge tutanó; **AUS** 83 tuni, 181 toon, 181 towon/thoun/down/thone
EARTH/LAND-5: AND Júwoi pákar-, **Kol** peakar-che; **AUS** 16 bugiara; 24 booga
EARTH/LAND-6: **AUS** poordo; **BNG Kauralaig/Saibai** paruder
EARTH/LAND-7: AND Púchikwar pér-da; **AUS** 115 pōōrā, 188 parri, 106 pulo, 113 boora, 186 bur-ray, 187 burrai, 169 burri
EARTH/LAND-8: **AUS** 125 mannie; **TAS Milligan** manni-na
EARTH/LAND-9: **AUS** 98 moo, 102 myi, 104 mya, 105 mai-i; **BNG Toaripi** mea
EARTH/LAND-10: **AUS** mūndeĕ, 77/81 mundi; **GNG Bongu** mondom, **Manikam** manidannu, **Bogadjim** mandam
EARTH/LAND-11: **AUS** 155 nante/nundee, 8/9 nguntha, 137 nundee, 177 nanthe; **TAS Milligan** nattie, **Lhotsky** natta
FIRE-1: AUS 69A kulba; **GNG Kamoka** gérep, **Kelana-Kai** gerep
FIRE-2: AND Béa chápa-da, **Bálé** choapo; **AUS** 193 kanbi, 196 gunbey
FIRE-3: AND Önge tuké; **AUS** 7 toko
FIRE-4: AUS 120 tano, 193 tenner; **TAS Milligan** tonna
FIRE-5: AUS boari, 147/154/155 boree, 144/151 boorie, 155/156 bore, 114 birree, 123 burri, 128 borra, 155 burri, 171 y-burra; **GNG Bongu** bala, **Manikam** beliu (Nicobar Is. balā)
FIRE-6: **AUS** 180 myee; **BNG Kauralaig** mue, **Saibai** mui
FIRE-7: **AUS** 163 ngoon; **TAS Seatt** nooena, **Milligan** nguna
FIRE-8: **AUS** 134 wygunna, 107 wichun, 14 wagan-ger; **TAS Jorgensen** wighena
FIRE-9: **AUS** 190 ween, 207K weein, 207C/207J win; **BNG Koiari/Eikiri/Koita/Maiari/Favele/Kupele/Meroka** vene
FIRE-10: **AUS** 165 oone; **TAS Peron** une, **Robert** auane
FIRE-11: **AUS** 137 oola, 140 olla, 103 eula; **BNG Manukolu** ile
FIRE-12: **AUS** 38/39 oora, 38 oorra, 39 ooraa; **BNG Mowat/Kiwai** era, **Miriam** ur
HILL/MOUNTAIN-1: AUS 4 dakko, 157 tongoo; **BNG Tumu** tuku-me; **GNG Kai** tiki
HILL/MOUNTAIN-2: AUS 156 pangoo/bangu, 174 bango, 177 banko/bungo; **GNG Poom** banagá
HILL/MOUNTAIN-3: AND Béa bāūrōīn-da, **Bálé** bāūrōīn-da, **Púchíkwar** búrin-da, **Kol** búrin-che, **Kédé** burin, **Cháriár** burain; **AUS** 114 burry, 128 barrie, 153 birrie, 142 byrre, 41 purri, 102 poori, parroo, 147 paree, 150 parri, 133 a-boro
HILL/MOUNTAIN-4: AUS 19 erar, 107 re, 164 yare; **BNG Domara/Mairu** oroi
MOON-1: AUS 110 kitar; **BNG** ? kisuri
MOON-2: **AUS** 190 guar, guer, 179 guir; **BNG Dabu** kwar
MOON-3: **AUS** 150 kaaka, 158 kaika, 187 gewak, 84 kakur, 37 au-kacha; **BNG Dabu** kwak
MOON-4: **AUS** 190 kewong, kewa, 183 gawa, 173 gibbun; **GNG Kelana-Kai** koiron
MOON-5: **AUS** 171 gireum; **GNG Bongu** karam
MOON-6: AND Kédé chirké, **Önge** chilemé; **AUS** 136 karka, 144 karkurra
MOON-7: AND Béa ógar-da, **Bálé** ógar-da; **AUS** 143 oggera
MOON-8: AUS 207F thonwoon; **TAS Norman** toweenyer (also "SUN")
MOON-9: AUS 6 tanar-anga; **GNG Valmau** sanár
MOON-10: AUS 194 dowera; **BNG Domara** doveri, **Mairu** tovere
MOON-11: AUS 164/166/168 babai-n; **BNG Koaripi** papa-ri, **Motumotu** papa-re
MOON-12: AUS 40 peea; **GNG Bogadjim** bai
MOON-13: AUS 210/212 wane; **TAS Jorgensen** weena, **Milligan** weenah leah (leah is common to many words)

MOON-14: AND Púchikwar púki-da, **Júwoi** púkui-, **Kol** púki-che, **Bójigiáb** puki; **AUS 68** piki
MOON-15: AUS 203/207A/208C mittea-n, 202/208B meteya-n; **GNG Kai** masa, mosa
MOON-16: AUS 15 aurra, 214A yōōre, 214B yore, 214D yoori; **GNG Varopu** úra
NIGHT-1: AUS 149 korrio; **BNG Domara** garu; **GNG Manikam** kolu, **Bongu** galú, kolú, **Bogadjim** χolo
NIGHT-2: AUS 177 gobear; **BNG Saibai** kubilö
NIGHT-3 AUS 157 koonda, 155 gonda; **TAS Milligan** kaoota ("EVENING")
NIGHT-4 AND Béa gúrug-da, **Bálé** gurug; **AUS** 76 kailka; 131 gōōrungā
NIGHT-5: AUS 195 dua; **BNG Kiwai** duo
NIGHT-6 AND Kol pāūti-che; **AUS** 177 pitta; 207 boroin (v. widespread); **BNG Motumotu** faita, faita buru
NIGHT-7: AUS 130 waberri; **BNG Koita** vafiri
NIGHT-8: AUS 39 inura-uggeia; **BNG Kauralaig** inur
NIGHT-9: AUS 133 ngona; **TAS Milligan** nuné
RAIN-1: AUS 17 gabba, 18 gabby, 25 gabbee, 26 gabe, 32 gab, 20 kabbee, 20 kaba, 23 keip, 31 kaip, 64 kapie; **BNG Damara** guba [close to forms of type 'appa' (see **WATER-6**)???
RAIN-2: AUS 124 ko-a; **GNG Kai** hoe, **Poom** hai, **Kelana-Kai** koya
RAIN-3: AND 3 jo-chér; **AUS** 176/181 kollee
RAIN-4 AUS 102 bulla, 190 u-burra; **BNG Mairu** bailo
AUS 1 beaira, 7 a-pura, 104 pula, 102 pulla/bulla; **TAS Milligan** porrah, **Robert** boora
RAIN-5: AUS 12/28 babba, 159 booba; **GNG Hatzfeldhafen** bebe
RAIN-6: AUS 7,181, 207D/207G/207H/208H wolla, 190 walla
RAIN-7: AND Béa yum-da, **Bálé** yum; **BNG Manukolu** ieme, **AUS** 154 ammoo, 155 amoo (next to k-amo, very widespread), 121/45/155 k-amo, 99 c-ammo, 122/129/133 k-omoo, 130/140/177 k-ammoo, 131 k-ommo
RAIN-8: AUS 190 uroo, euro, 179 yuro, 181 yuro, yooroo, 187 yurra; **BNG Mowat** ueiri
WATER-1: AUS 202 jarti-ni, 200 karti-n; **TAS Jorgensen** mocha karty
WATER-2: AUS 2 e-a-ke, 38 ewaka, 55 n-ukka, 74 n-oko; **GNG Hatzfeldhafen** aak
WATER-3: AUS 63 kow, 62/66 kowi, 60 kowie; **GNG Augustafluss** gu
WATER-4: AUS 170/168 ṭobbi-l; **GNG Anal** tipe
WATER-5: AUS 126 dunju-n, 125 doonga-lla; **GNG Kelana-Kai** sango
WATER-6: AUS 13/46/49 appa, 14 apper, 4/8/55 apa, 7 ipi, 52/69 n-apa, 21 g-ab, 30/22 k-aba; **GNG Kai** oba, **Augustafluss** ob (see **RAIN-1**)
WATER-7: AUS 71 moko, 89 mookooa; **TAS Jorgensen** mogo, mocho, moka, **Lhotsky** moga
WATER-8: AND 9 ingé, **Béa** ina-da, **Bálé** ina, **Bójigiáb** ena, **Kédé** ine, **Cháriár** inó; **AUS** 171 yong
WATER-9: AUS 52/74/75/81/85 nookoo, 30 nakka, 88 nuak, 32 ngook; **BNG Kauralaig/Saibai** nuki
WATER-10: AND Púchíkwar léké-da, **Júwoi** léke-, **Kol** léke-che; **AUS** 5 lucka; **TAS Lhotsky** luga-na
SMOKE-1: AUS 95 koomiri, 96 koomere, 97 koomiree, 99 coomera, 99 koomeree; **BNG Miriam** kemur
SMOKE-2: AUS 11 koore, 12 gooree, 16 keri, 17/18 kerra, 19 keera, 19 garee, 20 kere, 21 keer, 25 geree, 83 karí, 132 kurra; **GNG Bogadjim** gorém
SMOKE-3: AUS 102 kootpo, 101/102/106 koodoo, 102 koodo, 190 gutta, 39 couta, 14 u-kkoda, 42 u-kurta, 55 u-kardrie, 101 koodoo, 105 kurtoo; **GNG Kai** hosa
SMOKE-4: AUS 175 too, 181 too, thoo; **BNG Kauralaig** tuo, **Saibai** tu
SMOKE-5: AUS 167 thoom; **BNG Mowat/Kiwai** tema
SMOKE-6: AUS 121/145 tooga, 122/177 toga, 129/147/148/151/158/174 tooka; 142 toocha, 146 tuga, 176 tugga, dooga, 177 took, thook; **BNG Koiari** duika
SMOKE-7: AUS 188 buttam 201 pooti, 102 boothi, 183 bootho, 187 be-autoo, 190 bodo, 199 boto; **BNG Domara** bauta, **Mairu** pautu
SMOKE-8: AUS 207G pooroin, 207A boring; **TAS Milligan** prooana, **Robert** boorana
STAR-1: AUS 11 kooralyana, 113 kooro-pitche, 120 karo-min, 190 kira-la, giri-lla, 37 ur-chilea (=LIGHT); **BNG Toaripi/Motumotu** koru, **Eikiri/Maiari/Favele** koro
STAR-2: AND kāīchon, 7 kaichan, kāīchan-le, 5 kaichen; **AUS** 159 googe, 176 googee; **BNG Kiwai** gugi
STAR-3: AUS 6 kama-ringi, 173 kiome-gun; **GNG Varopu** kamó
STAR-4: AND Bálé chalámi; **AUS** 120 karomi-n/karrome-n; 166 kal'bar
STAR-5: AND Béa cháto-da, **Kédé** kátáin, **Cháriár** kátáin; **AUS** 159 goonda, 26 ginda, 31 chindi
STAR-6: AUS 52 toke, 90 berinia, 5 pirni; **TAS Milligan** teah brana

STAR-7: AUS 83 tuldi, 199/201/202/203 toorti, 200 toord, 204/206/207A/207B/207D/208A/208B/208C/208D/208G/208H/209A/209B toort, 214A/214B/214C toorta, 214D toorto; **TAS Robert** daledi-ne
STAR-8: AUS 194/16 tondor, 174 dandura, tandooroo; **BNG Kauralaig** titure
STAR-9: AUS 15 edoo; **BNG** ? uti, **Mairu** idiu
STAR-10: AUS 194 tingee, 84 dingi, 102 dingo; **GNG Augustafluss** tangui
STAR-11: AUS 20 tere, 33 twor, 110 towar, 134 tor, 156 duru, 164 dirrai, derail, dirri, deri; **GNG Anal** taúru
STAR-12: AUS 49 peera, warka-warke, 76 poolia, 75 bōōlĕe, 81 booli, 85 billee; **TAS Jorgensen** pala-na; **BNG Dabu** piro
STAR-13: AUS 207C poongel; **GNG Manikam** buongar, **Bogadjim** bongar, **Wenke** buanger
STAR-14: AUS 9 petu; **TAS Lhotsky** pote-na
STAR-15: AUS 132 woora, 143 worrai; **BNG Kiwai** wer
STAR-16: AUS 180 meria, 181 mirri, 182 mirri-n; **TAS Lhotsky** mara-ma, **Jorgensen** mara-na
STONE-1: AUS 105 keppo, 75 gībbă, 102 gibba; **BNG Mairu** kwaipo
STONE-2: AUS 108 koola, 181 gulla, 176 goora; **BNG Kauralaig** kula, **Saibai** kōla; **GNG Kai** gala/gola
STONE-3: AUS 60 keidna, 61 kadne, 43/45/47 kadna, 62 kudyna, 178 goodno; **GNG Bongu** kitang
STONE-4: AND Béa tāili-da, **Bálé** tāili; **AUS** 179 tarro, 98 diur, 178 tharo
STONE-5: AND Önge taiyi; **AUS** 159 taye, 167 teya/doee
STONE-6: **AUS** 68 pure, 171 purri, 34 boory, 107 berry, 114 burry, 124 burreem 158 barree, 176 bori, 177 barre, etc.; **TAS Norman** perăr, **Seatt** peoora
STONE-7: AND Júwoi māka-, **Kol** méaka-che; **AUS** 88 maak, 87 mok, 203 maaki, 199/202 mukki
STONE-8: AUS 52 nora; **BNG Kiwai** nora
STONE-9: AUS 209B laan; **TAS Milligan** line, **Peron** lonna, **Jorgensen** loine
STONE-10: AUS 2 lunga, lungea, **TAS Jorgensen** longa
SUN-1: AUS 27 kang, 169 genan, 37 ur-jinga, 160 kine; **GNG Manikam** kieng, keng
SUN-2: AND Önge éké; **AUS** 74 ooko
SUN-3: AUS 103 tooro, 140 tooroo, 152 tooru, 153 thur-roo, 155 taro, toro, thoroo, 154 dooroo; **BNG Toaripi/Motumotu** tare, **Elema** tari
SUN-4: AUS 120 potera; **TAS Lhotsky** piteri-na
SUN-5: AND Bále bāūdo, **Púchikwar** púte-da, **Júwoi** púte-, **Kol** pútē-che; **AUS** 152 bootoo, 154 boothoo, 158 boodoo ('STAR' in some 20 languages)
SUN-6: AUS 196 wyne-n, weenyoo; **GNG Poom** véna, **Augustafluss** wán
SUN-7: AUS 190 erai, 181 eri; **GNG** auráu
WIND-1: **AUS** 146 kaiba, 147/148 kaipa; **BNG Kauralaig/Saibai** guba
WIND-2: **AUS** 151 touera, 190 thouurra, tourra, dara; **TAS Norman** téever-lūttaner
WIND-3: AND Bálé poát-nga, **Púchíkwar** pāūte-, **Kol** pátē-che; **AUS** 129 poodtha, 176 padoo-na;
WIND-4: **AUS** 33 marerr; **BNG Motumotu** mururu
WIND-5: AUS 208H –mai-a; **BNG** 54 mu, 176 meen
WIND-6: AND Béa wul-nga-da, wulanga-da; **AUS** 204, 207A willa, 202/203 willa-ngi
WOOD/TREE-1: **AUS** 39 ulla; **GNG Kadda** aliko
WOOD/TREE-2: **AUS** 164 choo, 117 kai-bool; **TAS Peron** gui
WOOD/TREE-3: **AUS** 164 thorr, 210 tower, dower, 121 tula (v. widespread); **BNG Toaripi/Motumotu/Elema** tora
WOOD/TREE-4: AND Púchíkwar tákal-da, **Júwoi** tāūkal-, **Kol** tāūkal-che, **Bójigiáb** tákel; **AUS** 101 tooker
WOOD/TREE-5: **AUS** 162 too, **BNG Motumotu** taao
WOOD/TREE-6: **AUS** 133 toolani, 165 dallino, 199 dola-kyup, 2 toolya-thilde; **TAS** J toronna
WOOD/TREE-7: AND Béa aka-tang-da, **Bálé** aka-toáng, **Púchikwar** ó-tong-da, **Júwoi** āūkāū-tang-, **Kol** tāū-táng-le; **AUS** 101 tooker, 110/113 toko
WOOD/TREE-8: **AUS** 7 paia; **BNG Saibai** piu
WOOD/TREE-9: **AUS** 18 bonna, 19/21/24/30 boona, 20 bona, 25 bonna, 33 boon; **TAS Robert** monna
WOOD/TREE-10: AND Béa pútú-da, **Bálé** pútu; **AUS** 128 budda, 153 boodi
WOOD/TREE-11: **AUS** 50 muckoora, 51 mukorra; **TAS Milligan** muggra wabé
WOOD/TREE-12: **AUS** 190 ween, 207C/207I/207J, 208J win; **TAS Milligan** wiena, winna, **Norman** weenar, **Robert** weena

MILK-2 AND Kédé ir-mama-ti-óné; **Cháriár** ir-mamát-tí jöne (cf **MOTHER-3**); **AUS** 28 mimee, 163 maam, 197 mimi-n, 120 mammoon, 114 ngammoon, 192 amoo, 142 ammoo, 60/69A/73/106 ama, 107 amma, 131 ammoona
GOOD-1: AUS 175 kubba, 181 kobia, cubber, 31/32/33 quab, 16 guaba, 18/20 quabba, 21 quobba, 30 qub, 25 guabba, 22 quaba; **TAS Norman** narar-cooper; **BNG Kauralaig** kape, kopui
GOOD-2 AND Béa béringa-da; **AUS** 90 booraga, 94 poorooga
GOOD-3: **AUS** 191 beal, **GNG Bongu** beli
GOOD-4: **AUS** 149 balki, 161 balka; **GNG Kadda** belék
GOOD-5: **AUS** 10 minni, 113 minnie, 115 mīnni, 116 minnie, 141 manu; **BNG Kauralaig** mina, **GNG Kelana-Koi** muaine
GOOD-6: **AUS** 7 mita; **BNG Motumotu** meda, **Elema** meta, **Maiari** maīte
GOOD-7: **AUS** 155 megi-n, 152 micka-n, 174 maki-ne, megu-n; **BNG Koita** māgē
GOOD-8: **AUS** 118 mullee, 194 myalli, 102 myalle, mially; **BNG Favele** maile
GOOD-9: **AUS** 156 mai; **BNG Kupele/Meroka** maie
GOOD-10: **AUS** 128 nooda; **BNG Tumu** nato
GOOD-11: **AUS** 207E ngebo; **GNG Valmau** ngopu
BAD-1: **AUS** 194 kannia, 37 o-kina (cf **Raluana** a-kaina); **BNG Kabana** koena
BAD-2: **AUS** 181 kokil, kagil, kuggil, kogil, 175 kokle, 175 kugeel, 201 chilka, etc.; **BNG Elema** kakori, **Dabu** gagir; **GNG Arop** kokelék
BAD-3: **AUS** 91 kakai, 121/130 kicha; **TAS Lhotsky** katca
BAD-4 AND Béa chāūru, **Bálé** chóáro **Púchíkwar** chárōō, **Júwoi** cherāō, **Kol** ch'rāō-wan; **AUS** 27 koorie, 1 guarra, 2 kawarra, 210 kiario; **BNG Kiwai** karakaroi
BAD-5: **AUS** 106 terri, 185 dolo; **BNG Koiari** tauri, **Koita** douri
BAD-6: **AUS** 35 booka; **BNG Kiwai** beka
BAD-7: **AUS** 76 boolaga-lli; **GNG Kelana-Koi** bolekina
BAD-8: **AUS** 161 woote; **BNG Kauralaig** wate, **Saibai** watui, **Miriam** wit
BAD-9: **AUS** 190 ingee; **GNG Hatzfeldhafen** ingia
BAD-10: **AUS** 124 areeam 4 awooraree; **BNG Damara/Mairu** oreore
BAD-11: **AUS** 208F noola-m, 209B nulla-m; **TAS Milligan** noile
HOT-1: **AUS** 76 tila, 81 taweela; **GNG Valmau** téliel
HOT-2: **AUS** 97 ooirbur, **BNG Miriam** urweri
HOT-3 AND Bálé úwia; **AUS** 213 oueba, 107 yowee
COLD-1: **AUS** 209C cabin; **BNG Saibai** gubuna
COLD-2 AND Béa choki-da; **AUS** 103 kitcha
COLD-3 AND Púchíkwar térem-da, **Júwoi** t'rem-che; **AUS** 197 thurrun
COLD-4: **AUS** 134 didoora; **BNG Kabana** dudura
COLD-5: **AUS** 62 beeree; **GNG Valmau** pere
COLD-6: **AUS** 85 lookur; **BNG Maiari** lukure, **Eikiri/Favele** likuru
LARGE-1: **AUS** 178 kukene, 124 kaka; **GNG Kai** kaogone
LARGE-2: **AUS** 52 koba, gooba; **GNG Bogadjim** koba
LARGE-3: **AUS** 17 gamba, 31 komboiw, gumbar, 20/21/23 goombar; **GNG Augustafluss** čimbi
LARGE-4 AND Júwoi cháki, **Bálé** kócku; **AUS** 124 kuka, 178 kuku-ne
LARGE-5 AND Béa doga-da; **AUS** 187 tooka-l, 186 tucka-l
LARGE-6: **AUS** 194 berra-ga, 143 bur-ea; **BNG Kupele/Meroka** baru-ka
LARGE-7: **AUS** 121 boolgi; **GNG Kadda** beleko
LARGE-8: **AUS** 57 burra, 24 boroy, 175 booral; **GNG Bongu** boro
LARGE-9: **AUS** 26 nguman, 19 ngooman; **GNG Bongu** namán
LARGE-10: **AUS** 130 boabirra, 190 babbīr; **TAS Milligan** pawpela, papla
LARGE-11 AND Béa bódia-da; **AUS** 9 boota, 213 budda
SMALL-1: **AUS** 45 koopa-koopa; **BNG Miriam** kēbē
SMALL-2: **AUS** 95 gar-noo; **TAS Jorgensen** curena
SMALL-3: **AUS** 157 kagara, 130 kokoro; **GNG Poom** gagane
SMALL-4 AND Béa ketia-da, **Púchíkwar** kátia-da, **Júwoi** chóté, **Kol** kātawa-le; **AUS** 180 kuthier, 99 kuddah
SMALL-5 AND Cháriár jo-tāā-u; **AUS** 102 tjie-tjie, thieu, 104 tii
SMALL-6: **AUS** 177 thippo; **BNG Mowat** sobo

WOOD/TREE-13: **AUS** 140 oroo, 72/76/78/79/80 yarra; **BNG Kabana** ora
DAY-1: AND Bálé koarlo; **AUS** 159 geurlo
DAY-2: **AUS** 165 tookim, 197 thauik, 49 deekee; **TAS Robert** tagama
DAY-3: **AUS** 151 pulla, 181 bolla; **GNG Kai** fule dzo ("**BECOME DAY**")
DAY-4: **AUS** 164 narroon, 97 neila; **GNG Kelana-Koi** ngaru
DAY-5: **AUS** 201 naynie; **GNG Valmau** nganu
GRASS-1: AND Chárіár chálu-taich; **AUS** 148 kalla, 50 koola, 17 gila, 15 goola
GRASS-2: AUS 211 boon, 212 ban, 163 ban, 210 ban, bun, 211 boon, 212 bani; **TAS Peron** poene
GRASS-3: AUS 176 mura, 61 mooroo; **TAS Jorgensen** myria
SHINE/LIGHT/SUN-1: AND Béa ker, **Bálé** kar, **Púchíkwar** ker, **Júwoi** ker, **Kol** ker; **AUS** 140 karra, 176 gilli, 163 girree, 205 kąro
SHINE/LIGHT/SUN-2: AND Béa bétel, **Bálé** bétel, **Púchíkwar** bātel, **Júwoi** bétal; **AUS** 69A peri
THUNDER-1 AND Béa púlúga-la, gāūrawa-che, **Bálé** púlúga-le, kúradá-ke, **Púchíkwar** bilak-le gāūrawa-ke, **Júwoi** bilak-le t'rémē-che, **Kol** bilak-ke, pārak-le; **AUS** 86 poorache, 85 poorook, 176 booringa, 149 booroon-ga, 152 baringa, 162 baroonji, 179 boorongi
THUNDER-2: AUS 138 borai, 177 barri, 176 booroo-nga, 130 gurru, 137 koorroo; **TAS Peron** bura
EGG-1: **AUS** 107 kookurry, coocurry, kokarri; **BNG Kauralaig/Saibai** kakur, **GNG Poom** kókole-madeine (**AUS** 120 meto)
EGG-2: **AUS** 46 kaapee, 51 kuppy, 52/58 kuppee, 53 kuppo, 55 kuppie, 56 kabbi, 69 kupi, kopi, 155 kobbo, 179 kaboa, 183 kabbo; **BNG** kap
EGG-3: **AUS** 131 coobeen, 121 kookabinya; **GNG Hatzfeldhafen** kakobira
EGG-4: **AUS** 29 yookoon; **BNG Kupela** uguni
EGG-5: **AUS** 92 taun; **BNG Manukolu** tomi
EGG-6: **AUS** 163 dail, 165 dile, 86 thullan; **GNG Bongu** taol, **Manikam** tuol, **Bogadjim** taúel
EGG-7: AND Chárіár jo-péro; **BNG Toaripi** fare; **AUS** 155 parroo
EGG-8: **AUS** 134 werroo, 14/15/27 wolla; **BNG Miriam** wer
EGG-9 AND Béa ar-māūlo-da, **Púchíkwar** ár-múle-da, **Júwoi** rá-múle, **Kol** ta-mule-che, **Kédé** mulo; **AUS** 169 mor; **BNG Motumotu** mere, **Domara** muru
EGG-10 AND Bálé māūlāīch; **AUS** 199 mīrkoo, 19 morgoo, 206/207A/207B/207D/207G/207J/207K/208C/208G/208H/208I mirk, 207H merk
FOOD-1: **AUS** 152 cuppar, **TAS Norman** gībbly
FOOD-2 AND Kédé te-jo, **Chárіár** áka-jeo; **AUS** 159 ja
FOOD-3 AND Bójigiáb tama-da (see **EAT-7**); **AUS** 158 toomoo, 164 thumun, 205 tooman
FOOD-4 AND Béa yát-da; **AUS** 91 yaddii, 177 yude, yuddy
FOOD-5: **AUS** 87/88 thaap; **BNG Kiwai** topo
CANOE/SHIP-1: **AUS** 176 gillee, 184 ba-kool, 124 ool-garoo; **BNG Kauralaig/Saibai** gul
CANOE/SHIP-2: **AUS** 166 kumbar, 24 kibera; **GNG Bongu/Manikam/Kadda** kobuň, **Bogadjim** χubuň
CANOE/SHIP 3 AND Önge dángé; **AUS** 155 tangi-n, 182 toongoo-n
CANOE/SHIP-4: **AUS** 181 woi; **BNG Mairu** wa
CANOE/SHIP-5: **AUS** 188 buba; **GNG Varopu** vúva
BARK-1: AND Kédé ot-kápo, **Chárіár** ot-kaba; **AUS** 164 kumba, kumbar, 166 kombar, 99 cimbi-n
BARK-2: AUS 208D tolang, 207J torong, 190 duran, during, thurung, dooronge; **TAS Jorgensen** toliné
BARK-3: AUS 133 bila, 135 bueer, 84 pilli, 177 biar, 181 boo-roor, 52 birrea; **TAS Peron** une bura, **Milligan** poora-nah, poora-leah
BARK-4: AUS 213 waaree; **TAS Norman** warra
BARK-5: AUS 202 mori, 208J moora-t; **TAS Norman** mōōmĕrĕ
LANCE-1: AUS 8/9 kooroo; **GNG Wenke/Anal** guri; **BNG Domara** gara
LANCE-2: AUS 110/113/114/108/121 kulka; 115 kulka, 118 kulgie, 120 kalge, 127/133 kalka, 131 cul-ga; **BNG Kauralaig** kalak, **Saibai/Miriam** kalak
LANCE-3: AUS 28 kooraḍo, 38 il-chirta, 46 kaltee, 55 kulthe, 56 kalti; **BNG Koita** karaudi
LANCE-4: AUS 136 githa, 19 gigey, 20/21/24 gidgee, 25 gidigi; **GNG Bongu** gedya
LANCE-5: AUS 179 bithiṇ, 179 pathin; **GNG Kelana-Koi** bosan
EXCREMENT, EVACUATE-1: AUS 94 turra, 171 toroo, 91 dulla; **TAS Peron** tere
MILK-1: AND Béa kám-rāīs-da, **Bálé** koám-yúrúch, **Púchíkwar** kom-rāīch-dá, **Júwoi** kāū-mērāīs-, **Kol** kom-rāīch-che; **AUS** 155 kąmmoo-n

SMALL-7: **AUS** 77 baie; **GNG Augustafluss** pao
SMALL-8: **AUS** 16 poton, 16 bottene, 25 botine; **GNG Kai** pitine
DEAD-1 AND Púchíkwar om-pil-nga, **Júwoi** am-pil-chikan, **Kol** om-pil-en, **Kédé** em-pil; **AUS** 181 bolloo, balu-n, 71 pooree, 190 ballu-n, ballo, boo-loo, pallo-nee, 61 palli-no
DEAD-2 AND Önge béchá-mémé; **AUS** 74/76/77 booka, 75 bōkkă, 80 pukka, 82 bocca, 90 boo-kia-ba
HUNGRY-1: AND Béa wéraliké; **AUS** 74 wilka-wilka, 7 willu-ka, 82 willkaya, 79 wilka, 81 wilkoa
HUNGRY-2: AND Púchíkwar kélape, **Júwoi** k'lipa, **Kol** kalipi, **Chárián** o-chérpi; **AUS** 155 karbe-rri
THIRSTY-1: AND Kol áka-pāī, **Kédé** ta-pai, **Chárián** ta-pai; **AUS** 179 boii
VERY, MANY, FULL-1: AND Kédé ir-kure; **AUS** 133/189 koora, 8 koolya
VERY, MANY, FULL-2: AND Bálé kóchu; **AUS** 199 koko, 80 koga
VERY, MANY, FULL-3: AND Júwoi á-chápar; **AUS** 123 curbara, kulburra
VERY, MANY, FULL-4: AND Béa doga-da; **AUS** 118 ducki-n
VERY, MANY, FULL-5: AND Bálé ár-púlia-da; **AUS** 18/19/21/22/24/25/27/31, etc. boola, 23 poola
VERY, MANY, FULL-6: AND Önge li-wángé; **AUS** 164 wingo-re
SWEET-1: AND ? tálang-da, **Júwoi** tāūlang- , **Kol** tálang-le
SPEAK-1: AUS 130 kaae (see "**TONGUE**")
SEE-1: AND Púchíkwar ir-tilu, **Júwoi** re-t'liu, **Kol** er-tīlu; **AUS** 140 tilli-kuuckela, 131 telli-nulla, 141 etc. tilli [EYE]
SEE-2: AUS 62 mena, 107 munna; **BNG Saibai** i-man
SEE-3: AUS 133 nakanyo (root 'nak'is very common); **TAS Norman** neūnkenar
SEE-4: AUS 190 naga, naikoo; **GNG Manikam** e-nuka
SEE-5: AUS 7 178 nad, 190 naddoo, 188 nata-n; **GNG Valmau** nete
GO/WALK-1: AUS 91 kurrai, 19 koola; **GNG Bongu** girā
GO/WALK-2: AND Púchíkwar chóle, **Júwoi** chólē, **Kol** chóle, **Chárián** chóle, ōi-choló; **AUS** 21 gooley, 21 koola, 33 kulli-ng
GO/WALK-3: AND Kédé óichó; **AUS** 63 ooki-ta, 64 ooku-tta
GO/WALK-4: **AUS** 151 tooa, 131 thoo-a; **TAS Jorgensen** twaie; **BNG Toaripi** dau
GO/WALK-5: **AUS** 6 tur; **BNG Kiwai** toro, turi; **Toaripi** terai, **Motumotu** tereia
GO/WALK-6: **AUS** 2 mogwerie; **TAS Jorgensen** mogoro
EAT-1: **AUS** 155 komo (=**DRINK**) (in some 10 languages, there is a common word for '**EAT**' and '**DRINK**'), 39 aul-goma, 38 ool-goma; **BNG Kiwai** kwam
EAT-2: **AUS** 137 enga; **BNG Manikam** ouke (cf. **DRINK-1**)
EAT-3: AND Kédé tojo, **Chárián** tojojo; **AUS** 83 takkin, 186 tackenay, 155 daka, 187 taki, 187 thakoo, 207C takk, 160 dagga, 148 dangain; **TAS Milligan** tuggana
EAT-4: **AUS** 88 thaua, 75 ti-ee, 197 thai-i; **TAS Jorgensen** tuwie (see **DRINK-5**)
EAT-5: **AUS** 105 titia; **TAS** J doda-ni (see **DRINK-4**)
EAT-6: **AUS** 7 edede-ra. 111 athath; **BNG Dabu** utota (see **DRINK-5**)
EAT-7: **AUS** 148 dangai-n, 178 thangeai; **GNG Augustafluss** dyangui
EAT-8: AND Púchíkwar táme, **Júwoi** támē (See **FOOD-3**)
EAT-9: **AUS** 140 minna; **TAS Jorgense** meenawa
EAT-10: AND Béa mek; **AUS** 214B maichimiak
EAT-11: **AUS** 80 nannu, 20 nanni-ng, 18 nana-ng, 19 ngannow; **TAS Jorgensen** newinna; **GNG**: **Poom** nona, nana
EAT-12: **AUS** 155 euri; **BNG Mowat** urio, **Miriam** aro, ero
EAT-13: AND Kol āūkāū-yéu; **AUS** 179 yooa
DRINK-1: **AUS** 138 uka; **GNG Hatzfeldhafen** 10 āk (cf. **EAT-2**)
DRINK-2: AND Béa to-ku, **Chárian** to-ku; **AUS** 15 howa
DRINK-3: AUS 214A thagoona; **GNG Kelana-Koi** dokune
DRINK-4: AUS 76 dunge-ra; **GNG Augustafluss** dyangui
DRINK-5: AUS 305 tata, 207C thathia, 207F thathea
DRINK-6: AUS 128 abra; **BNG Tumu** ōbōra, **Elema** abura
DRINK-7: AUS 155 amoo; **BNG Koiari** ima
DRINK-8: AUS 110 nocal (also '**EAT**'), 88 ngokolao; **TAS Milligan** nugara; **GNG Valmau** vul nago
SIT-1: AUS 60 e-cakoo, 211 kako; **BNG Koiari** gogi
SIT-2: AND Júwoi ré-deka; **AUS** 148 teeka, 109 tucai, 62, tecku-nda, 65 ticka, 67 dikka-nie, 66 teku-nny
SIT-3: AND Béa / Bálé aka-doi; **AUS** 149 tee-in

SLEEP-1: **AUS** 8 kooni, 162 kopni-m, 148 koni-n, 8 un-gnina; **BNG Kupela** gánu; **GNG Kai** guń fodzo
SLEEP-2: **AUS** 114,136 oko, 44 yaga, 43/45/46 iag'a
SLEEP-3: **AUS** 205 kooma, 165 koomi-n, 95 oo-kom-bi, 97 oo-kambirr; **BNG Meroka** g'amu
SLEEP-4: **AUS** 4 gooree; **BNG Damara** garu
SLEEP-5: **AUS** 176 deba, mor-deba; **BNG Kauralaig/Saibai** u-teipa
SLEEP-6: AND Béa mámi, **Bálé** mámi; **AUS** 61 meya, 63 mia, 60 miya
SLEEP-7: AND Kol móli, **Púchíkwar** móli; **AUS** 59 meer
SLEEP-8: AND Kol o-mókábé; **AUS** 48 mookapri-ri
DIE/DEAD-1: **AUS** 188 tateba (= **DEAD**); **BNG Kauralaig** dadeipa
DIE/DEAD-2: **AUS** 23 aout (= **DEAD**); **BNG** ? eud
DIE/DEAD-3: **AUS** 94 poǫga (= **DEAD**), 88 pukka (cf. '**DEAD-2**'); **BNG Koiari** foge
DIE/DEAD-4: **AUS** 191 boe, 173 boo-ng; **BNG Damara** bau
NEAR-1: **AUS** 16 tuonga, 31 twonk (EAR); **TAS Milligan** toienook boorack
I-1: **AUS** 190 addum 52 atho, 57 atoo, 190 athu; **GNG Bongu** adyi
I-2: AND Júwoi te-kile, **Kol** tú-che, **Kédé** tui, **Cháriár** tio; **AUS** 190 thu, 67 ti
I-3: **AUS** 148 ma-tta, 179 mi-na; **TAS Robert** mana
I-4: AND Önge mi; **AUS** 186 mee, 214B my
I-5: **AUS** 41,68 ngai; **GNG** 4 nai, 15 ni, 171 nio; **BNG Kai** no, ni
I-6: **AUS** 171 minyee, 26 munnur; **GNG Augustafluss** nun
YOU-1: **AUS** 159 nin, 67 ninni; **TAS P** nina; **GNG Bongu** ni, **Bogadjim** ni
YOU-2: (S/PL)-2: AND Béa ngal-la, **Bálé** ngol, **Púchíkwar** ngule, **Kol** ngu-lu; **AUS** 88/205 ngooro, 84 ngurra, ngurri, 85 nooroo, 207E ngoro
ONE-1: **AUS** 69/69A/72 koola, 118 yoon-gul; **GNG Augustafluss** kela
ONE-2: **AUS** 11/12/15/27 kootea; **GNG Bongu** kudyi, kúdyai
ONE-3: **AUS** 127, 131wigi-n, 135 wagi-n; **GNG Kelana-Koi** weku
ONE-4: **AUS** 197 boor, 211 bore, 175 ber, bee-er; **TAS Norman** bōrār
ONE-5: AND Béa/Bálé úbatúl; **AUS** bather
ONE-6: **AND** 9 yu woiyá; **AUS** 42 weyoo
ONE-7: **AUS** 97 moar, 104 moorraroo; **TAS Peron** marai
ONE-8: **AUS** 88 mo, **GNG Kai** mo
ONE-9: **AUS** 107 murina; **TAS Norman** marrarwan
ONE-10: **AUS** 79 nidda, 78 ngitya
ONE-11: **AUS** 82 nuckei, 75 nēēchă, 77 neecha, 76 nicha; **GNG Augustafluss** nak
ONE-12: **AUS** 53 warra; **GNG Augustafluss** uarra
ONE-13: **AUS** 121 wirbam 136 warpa, 145 wurba, 146 warba, 149 werba, 151 woorba, 143 wirbu-rra, 144 warbur; **BNG Kauralaig** warapu-ne
TWO-1: **AUS** 62 kylopela, 63 kilbelly, 41 killipille; **TAS Jorgensen** calabwa
TWO-2: **AUS** 8/9/36/40 kootera, 10 kootara, 11 kootthurra; 12 koodthera, 27/28/40 koothera; **BNG Kauralaig** kwasur, **Saibai** u-kasar
TWO-3: **AUS** 118 yekka, 120 yakka, 119 yugga, 124 yug-ga; **GNG Saibai** yaheka, **Kai** yahe, yeyahe
TWO-4: **AUS** 179 boother, 161/164 bood-la; **BNG Koiari/Eikiri/Maiari/Favele/Kupela** a-buti
TWO-5: **AUS** 159 booai; **BNG Koita** a-bu, **Meroka** a-bui
TWO-6: AND Béa ik-pāur-da, **Bálé** īd-pāūro-tot, **Púchíkwar** ir-pāūr, **Júwoi** ré-pāūr, **Kol** er-pāūr; **AUS** 69/76/163/179/181, etc. boola (v. widespread); **TAS Milligan** pooalih, **Peron** bura, **Jorgensen** boula
TWO-7: **AUS** 155 woodtha, 14 woother, 154 woothah, 15 woothe-ra; **GNG Anal** róunke
THREE-1: **AUS** 40/120 karboo, 118 kurboo, 119 karrbo, 183 gullība, 181 gūlēba, 175 kullibo, 181 koolība, koolabar, koolēba, koollipa; **GNG Poom** haraba, **Bogadjim** χalub
THREE-2: **AUS** 51 wunnǫo; **GNG** 6 winoya
THREE-3: **AUS** 28 mangoor, 67 mangoore; **GNG Augustafluss** mongul
THREE-4: **AUS** 161 numma; **GNG Augustafluss** nomu
FOUR-1: **AUS** 171 gurul, **GNG Bongu** gorle
FOUR-2: **AUS** 188 tarri; **BNG Domara** taurai, **Mairu** sourai
NO-1: **AUS** 149 tammai; **TAS Milligan** timeh, tīmy
NO-2: **AUS** 27 barrie, 110 karrīr, 113 kurree, 115 kūrrĭ, 114/121/131/134, etc. kurra; **TAS Milligan** parra, garah
NO-3: AND Béa yába-da, **Bálé** yábo; **AUS** 214D yabba-la, 208D yembá, 164 abay

NO-4: AND Púchíkwar póye-da, **Júwoi** póya-, **Kol** póyi-che, **Kédé** puiyo; **AUS** 120 bai
NO-5: AUS 42 myella, 102 mallo, mullo, molloo, 104 mallo; **TAS Milligan** mallya leah
NO-6: **AUS** 76 nata, natha, 20 nati; **TAS Jorgensen** nudi, **Peron** nendi
YES-1: **AUS** 85 niyar, 99 ŋgear; **TAS Milligan** narra-wallee, narra, warrah, narro-barro, narra lu-weh
YES-2: **AUS** 199 eyar, 135 yar, 45 yarra, 33 yari; **TAS Peron** erre
IMMEDIATELY-1: AND Bálé ár-kāūwer, **Púchíkwar** ar-kewar-da, **Júwoi** rá-káūwer, **Kol** áká-wer-chē; **AUS** 163 kurra, 40 karree, 165 gurra, 44 karra; 62 earie.
IMMEDIATELY-2: AUS 182 burray, 170 baro, 16 bura, 73 palli; **TAS Peron** erre
TODAY-1: AND Bálé il-kaólót; **AUS** 28 kordey; 207E kirdoo, 208F ketowit, 207F kerdo
TODAY-2: AND Púchíkwar ábe-chil, **Kol** itabi-chél-lákele; **AUS** 190 keeli
TODAY-3: AND Júwoi éte-kéle; **AUS** 205 keto
TOMORROW-1: AND Béa wāi nga(i), wai-len, **Bálé** wó-nga-len; **AUS** 23 wooloolan, 31 woolelan, 42/43/45/47 wongara
WHERE-1: AND Béa tekári-cha; **AUS** 190 dagara, tugera
WHERE-2: AND Kédé téŋn; **AUS** 38 thina
WHERE-3: AND Bójigiáb ilé; **AUS** 171 yella, 173/178 ille; 172 illy, 184 yilla

NOTE: PHONETIC CORRESPONDENCES
To the spirant sounds, h, f, s (z) of the languages of New Guinea correspond as aa ruile in the Australian lanaguages, which lack spirants, respectyively the explosives k(g), p(b), t (th, d).
Dark vowels correspond to the clear Australian vowel sounds.
The sound k(g) in Australian almost always corresponds to the palatl ch (j)

ADDITIONAL ANDAMANESE-PAPUAN COGNATES IN VOLUME II

ARROW: BNG ? ta-bora; **GNG Hatzfeldhafen** ta-barak; **AND Júwoi** pelak
EYE: BNG Miriam pone; **AND Bálé** punu, **Púchikwár** ir-bein-da
FOOT: BNG Saibai koko; **GNG Kai** kike; **AND Béa, Bálé** ar-chag-da, **Púchikwár** ar-chok-da, **Júwoi** ra-chok, **Kol** a-chok-che
HOUSE: BNG Motumotu umi, **Kabana** ema; **AND Púchikwár** emi-da, **Júwoi** ami-, **Kol** emi-che
HUSBAND: BNG Kabana harea; **AND Púchikwár** ab-kara-da
FORTIFIED VILLAGE: BNG Kauralaig kaura; **GNG Manikam** guré, **Bogadjim** kure; **AND Béa** gara-da, **Bálé** goara
LIP: BNG Domar bibi-ta, **Mairu** Noga pipi-ta, **Mowat** ipu; **GNG** ipi; **AND Béa** pe-da, **Bálé** pa, **Púchikwár** pa-da
MOTHER: BNG Toaripi, Elema lou; **AND Púchikwár** auto-lu-da
SEA-1: BNG Miriam gur; **AND Bálé** júru, **Púchikwár** chira-ada, **Júwoi** chire-, **Kol** chire-che
SEA-2 GNG Kai hawe, **Bongu** kiwe; **AND Béa** tauko-kewa-da, **Bálé** tauka-kewa (seashore)
YAM: BNG Miriam ketai; **GNG Kai** kise, qaso; **AND Béa** cháti-da
DRINK: BNG Kupela e-bai; **AND Púchikwár** pai, **Júwoi** poi, **Kol** pai
HE: BNG Manukolu oi, **Maiari, Meroka** oe; **AND Júwoi** o-le, **Kol** o-le
HIS: BNG Mairu eke-ero; **AND Bálé** égé
BASKET: BNG Evorra kapi; **AND Púchikwár** chop-da, **Júwoi** chop-, **Kol** chop-che
BODY: BNG Kabana kan; **AND Béa** chao-da, **Bálé** chaoo
BOW: BNG Saibai gagai, **AND Júwoi** kok-, **Kol** kok-che
FRUIT: BNG Saibai kauda; **AND Béa** chita-da
ROOT: BNG Kauralaig kwiku, **Saibai** kwik; **AND Béa** ar-chag-da, **Bálé** ar-chag, **Kol** ta-chok-le
RED-1: BNG Koita kerekare; **AND Béa** cherema, **Bálé** cherema
RED-2: BNG Koiari korika; **AND Júwoi** chetak
GO/COME-1: BNG Mowat guitogu; **AND Béa** katik
GO/COME-2: BNG ? onaio; **AND Béa** on, **Bálé** aun, **Púchikwár** úne, **Júwoi** óne, **Kol** une
LIVE: BNG Kabana asi; **AND Béa** ig-ati
DIG/SPADE: BNG Miriam daiwi, dakellu; **AND Púchikwár** tive-tau, **Júwoi** tiwetokau
MY: GNG Bogadjim dyo(te); **AND Béa** dia-da

YOUR: GNG Kai gole; **AND Kol** la-ngú-le
SKY: GNG Hatzfeldhafen lamalam; **AND: Púchikwár** lémar-da, **Júwoi** lémar-, **Kol** lémar-che
GOOD: GNG Manikam boleng; **AND Béa** beringa-da
COME!: GNG Bongu giraˌ!; **AND Bálé** kélé

KEY TO CURR'S AUSTRALIAN CLASSIFICATION

1 Port Darwin, 2 Adelaide River, 3 Port Essington, 4 Rallies Bay, 5 Caledon Bay, 6 Roper River, 7 Cape York, 8 De Grey River, 9 Shaw River, 10 Nickel Bay, 11 NW Cape to 30 miles South of Gascoyne River, 12 Shark's Bay, 13 Mouth of Murchison River, 14 Northampton Tribe, 15 Champion Bay, 17 Victoria Plains, 18 Newcastle (WA), 19 Perth Tribe, 20/21 York District, 22 Pinjarra, 23 Kojomp/Etiomp, 24 Banbury, etc., 25 Blackwood District, 26 Lower Blackwood, 27 Irwin & Murchison, 28 Upper Sandford, 29 200 miles NE of Newcastle, 30 Mount Stirling, 31 King George's Sound, 32 Kent District, 33 Coast from Doubtful Bay to Israelite Bay, 34 Eyre's Sand Patch, 35 Eucla, 36 Head of Great Australian Bight, 37 Alice Springs, 38 Charlotte Waters, 39 Macumba River, 40 Streaky Bay, 41 Port Lincoln, 42 Peake Telegraph Station, 43 NW of Lake Eyre, 44 North Shore of Lake Eyre, 45 W of Lake Eyre, 46/47 Warburton River, 48 Cooper's Creek to E of Northern Branch and Koongi Lake, 49 Cooper's Creek in neighbourhood where Burke & Willis died, 50 Cooper's Creek near the Booloo River, 51 Nockatoonga, Wilson River, 52 Thargominda, Bulloo River, 53 Lower Bulloo River, 54 E of Strzelecki's Creek, 55 From Mt. Freeling to Pirigundi Lake, 56 Kopperamana, 57 Strangway Springs, 58 Umbartana, 59 Mt. Serle, 60 Beltana, 61 Wonoka, 62 E Shore of Lake Torrens, 63 Gawler Range, 64 Marachowie, 65 Mt. Remarkable, 66 Port Pirie, 40 miles E of, 67 Yorke's Peninsula, S. Australia, 68 Adelaide & neighbourhood, 69 Evelyn Creek, 69A Near NW Corner of New South Wales, 70 Country NW of Barrier Range, 71 Country about 60 miles NW from a point on the Darling, midway between Menindie and Wilcannia, 72 Boolcoomatta, 73 Torrewetto, 74 Lower portions of the Paroo and Warrego Rivers, 75 Bourke, Darling River, 76 50 miles below Bourke on the Darling River, 77 Wilcannia, 78 Tintinaligi, 79 Weinteriga, 80 Menindie, Darling River, 81 Tolarno Station, 82 Junction of Darling & Murray Rivers, 83 From the Banks of the Murray river where it enters Lake Alexandrina to the *embouchure* of that river and Lacapede Bay, 84 From Wellington on the Murray River to the North West Bend, 85 NW Bend of the Murray River, 86 Ned's Corner, 87 From the Mallee Cliffs to Wentworth, 88 From the junction of the Lachlan and Murray to the junction of the Darling and the Murray, 89 E of Nicholson River and between that river and the coast, 90 Burketown, 91 Mouth of the Leichardt River, 92 Mouth of the Norman River, 93 Middle Norma, 94 W Bank of the Leichardt River, near sea, 95 Leichardt River, 20 miles below Kamilarci Station, 96 Kamilaroi Station, Leichardt River, 97 Between the Gregory and Leichardt Rivers, 98 Seymour, Templeton and Cloncurry Rivers, 99 Cloncurry River, 100 Flinders & Cloncurry Rivers, 101 Burke River, 102 Hamilton River/Lower Georgina River/ Between Georgina & Burke Rivers, 103 Head of Hamilton River, 104 On Hamilton River near Boulla, 105 Junction of King's Creek and the Georgina River, 106 Lower Diamantina, 107 Junction of Thomson & Barcoo Rivers, also the Whitula Creek, 108 Princess Charlotte's Bay, N Queensland, 109 Endeavour River, 110 Weary Bay, 111 Akconkoon, Palmer River, 112, Lynd River, 113 Granite Range, close to Head of Mitchell River and E of Hodgkinson Goldfields, 114 Near the Head of the Walsh River, 115 Country about Thornborough Diggings, and near the Head of the Mitchell, 116 Granite Range at the head of the Walsh River, 117 Head of the Gilbert, 118 Hinchinbrook Island and adjacent Mainland, 119 Herbert River, 120 Halifax Bay, 121 Headwaters of the Burdekin River, 122 Clarke River, 123 Top of Range near Dalrymple, 124 Cleveland Bay, 125 Mt. Elliott, 126 Mouth of the Burdekin River, 127 Porter's Range, 128 Charters Towers, 129 Upper Flinders, Hughenden, Dutton River, etc., 130 Watershed & Upper Portion of the Cape River. 131 Natal Downs Station, 132 Ravenswood, Upper Burdekin, 133 Mt. Black, 134 Lower Burdekin, 135 Burdekin River, various tribes, 136 From Port Denison to Cape Gloucester, 137 Tower Hill and Cornish Creeks, 138 Upper Thomson, 139 Head of Diamantina, 140 Diamantina River, Middleton Creek, 141 Western River, 142 Main Range between Belyando and Cape Rivers, 143 Belyando, 144 Logan Creek, Lower Suttor and Lower Mistake Creek, 145 Fort Cooper, 146 Scrubby Creek, 147 Port Mackay, 148 Broad Sound, Yaamba, Maryborough, St. Lawrence, 149 Rockhampton and Gracemere, 150 Eastern slopes of Expedition Range, Lower Dawson, Upper Fitzroy, Mackenzie and Isaacs, 151 Peak and Logan Downs, 152 Alice River, 153 Barcoo, 40 miles W of Blackall, 154 Blackall, Barcoo, 155 Barcoo, Tambo, Mt. Enniskillen and Ravensbourne Creek, 156 Negou, 157 Head of the Comet, 158 Brown River, 159 Dawson & Burnett Rivers, 160 Kuppol Bay, Calliope, Curtis Island, 161 Boyne River, 162 Bustard Bay, Rodd's Bay, Many Peak Range, 163 Baffle Creek, 164 N. Side of Moreton Bay, Maryborough, between Brisbane and Gympie, Great Sandy or Fraser's Island, 165 Upper Burnett, Mt. Debatable,

Gayndah, 166 Mary River and Bunya Bunya Country, 167 Upper Brisbane River, 168 Brisbane River, 169 Condamine and Charley's Creek, 170 Stradbroke and Moreton Is., 171 Between Albert and Tweed Rivers, 172 Nerang Creek, 173 Tweed River and Point Dangar, 174 Part of Maranoa, 175 Balonne, Baleandoon, Nerrun, Weir and Moonie Rivers, 176 Dumaresque or Upper Mackintyre, 177 Paroo, Warrego and Mangalella Creek, 178 Richmond River, 179 Tenterfield, Glen Innes, 180 Queenbulla, Ashford and Quininguillan, 181 Barwan and Gwyder Rivers, Moree, Nundie, Wee-waa, Barraba, Bogabrie and Meeké, 182 Culgoa, 183 Brewarrina and Borwan, 184 Clarence, 185 Lower Macleay, 186 Port Macquarie, 187 Manning River, 188 Hunter River, 189 Hawkesbury and Broken Bay, 190 Castlereach River/Warren/Dubbo/Wellington/Hill End/Bathurst/Bogan/Sources of Bogan/Carcoar/Forbes and Levels/Candoblin/Waljeers/Wagga Wagga/Yanko, Urana, Billebong, Jerritderie/Deniliquin/Howlong/Albury, 191 Port Jackson, 192 Botany Bay, 193 Wollogong, Illawarra and Shoalhaven, 194 Jervis Bay, Mt. Dromedary, 195 Queeanbeyan, 196 Yase, 197 Moneroo, 198 Twofold Bay, 199 Swan Hill and Tyntynder, 200 50 miles S. of Swan Hill, 201 Piangil, 202 Bumbang, 203 Kulkyne, 204 Tatlarra, 205 Mt. Gambler, 206 Moreton Plains, 207A Lake Hindmarsh, 207B Lake Wallace, 207C Upper Glenelg and Wannon, 207D Glenelg, above Woodford, 207E Woodford, 207F Dartmoor, 207G Hamilton, 207H Mt. Rouse, 207I Portland, Condah, Eumeralla, 207J Hopkins River, 207K Hopkins River, 208A Moulmein, 208B Lake Boga, 208C Lower Loddon, 208D Gonn Station, 208E Gunbower, 208F Mt. Hope, 208G Kerang, 208H Natti-yallook, 208I Mt. Emu, 208J Moorabool, 209A Goulburn, near Seymour, 209B Upper Yarra, 209C Lower Yarra, 209D Merediyallook, 210 Gippeland, 211 Omee, 212 Snowy River, 213 Upper Murray, 214A Junction of Murray and Goulburn Rivers, 214B Tocumwall, 214C Ulupna (or Yoolupna)214D Yiilima.

2. TROMBETTI'S DRAVIDIAN-AUSTRALIAN CORRESPONDENCES

In Volume 2, Trombetti reproduces a list of general Dravidian-Australian cognates and then two separate lists of Tamil-Australian and Kannada-Australian cognates, based on Curr's Australian data and Caldwell's/Vinson's Dravidian data. These are transcribed here for reference purposes. I have also added Andamanese/Papuan etc. cognates in italics where these occur in Gatti's data.

GENERAL DRAVIDIAN COGNATES

ONE-1: Malto, Telugu oru; **Aus** 105 ooroo, 106 orroo
ONE-2: Gondi vanda; **Aus** 205 wondo, 207E, F woondo, wondo
TWO: Malto iru, īr; **Aus** 167 yero
THREE-1: Malto mumdru; **Aus** 136 mundula; ***GNG 11 Augustafluß*** *mongul*
THREE-2: Kui mūdu, **Kannada** mūdu; **Aus** 168 muddan
THREE-3: Telugu mūnnu; **Aus** 11 mun-gooraba
THREE-3: Brahui mūru; **Aus** 11 murra
FOUR: Malto, Telugu nālu, **Malto, Kui, Gondi** nal; ***Aus 63 nulla; Tas Peron nina; GNG 11 Augustafluß*** nun
I-1: Kaikadi anu; **Aus** 207A aan
I-2: Malayalam nanna; **Aus** 35 ngana
I-3: Malto nāṇ; **Aus** 18 nange
YOU-1: Malto, Kui, Gondi, Telugu, Kuruth ni; **Aus** 13 nee-nee
YOU-2: Gondi, Tamil, Korri nin; **Aus** 166 nin
YOU-3: Brahui ninu; **Aus** 120 nino
YOU-4: Kaikadi inu; **Aus** 164 in, 161 innoo
FOOT-1: Kui, Gondi, Telugu, Malayalam kāl, **Kannada** kalu; 208H kaar, 208C kar, 179 garra, 213 gerra; ***GNG Kelana Kai*** *kiese*
FOOT-2: Brahui khed; **Aus** 179 gidda
NOSE: Malto, 4, 10 mūkku, **Kui, Gondi** muka, **Brahui** migu, **Kaikadi** mungeli; **Aus** 107 mingo, mingoo,
EYE: Malto kaṇa, khaṇṇa, **Gondi** kaṇṇa, **Kaikadi** kannu, 9 kan; **Aus** 37 ul-gana, 38 al-kna
MOUTH-1: Tamil bai; **Aus** 142 beea, 177 be
MOUTH-2: Malayalam t̤ud̤d̤l; **Aus** 62 thied
MOUTH-3: Kannada noru; **Aus** 8 narra

TEETH: Telugu, Kannada pellu, **Kui** pell, **Gondi** pella, **Malayalam** pal; **Aus** 152 pirra; ***And Puchikwár*** *péla-da*
HAIR-1: Kui magara, **Gondi** magri; **Aus** 170 magool
HAIR-2: Brahui kūdalu; **Aus** 152 kultar
HAIR-3: Tamil, Malayalam chutti; **Aus** 131 kuthy; ***Tas Jorgensen*** *cetha-na,* ***Lhotsky*** *ziti-na;* ***GNG Poom*** *ḥõdo*
HAIR-4: Korri talith; **Aus** 73 tarta-woolka, 74 turtoo-bulki
HEAD: Tamil kukk; **Aus** 50 kooka, 48 koka, 181 kaoga; ***Tas Peron*** *cuegi,* ***BNG Kauralaig*** *kwiku,* ***Saibai*** *kuikö*
BELLY/STOMACH-1: Kui varag, **Gondi** vārga; **Aus** 11 waelgo, 12 wilguo; ***NGG Wenke*** *gulegim*
BELLY/STOMACH-2: Kui vayara; **Aus** 96 wyyeer
BELLY/STOMACH-3: Tamil kūl; **Aus** 118 kool-ko, 124 keela, 5 gooro
BELLY/STOMACH-4: Korri purath; **Aus** 154 burte
BELLY/STOMACH-5: Kaikadi vayara; **Aus** 190 daddo
FATHER: Korri abba, ābā; **Aus** 124/133 aboo [Correspondence with Munda]; ***BNG Kiwai, Miriam*** *aba,* ***Domara*** *abai,* ***Mairu*** *apai;* ***GNG Manikam*** *abú,* ***Bogadjim*** *abu,* ***Kadda*** *abe*
MOTHER-1: **Telugu** amma; **Aus** 104 amme, 102 ama; ***BNG Kauralaig, Saibai*** *ama;* ***Miriam*** *amau;* ***GNG Bongu*** *am*
MOTHER-2: Gondi gāmma; **Aus** 167 kame
BROTHER: Kaikadi dada; **Aus** 194 tutha, 167 dooda [Correspondence with Munda]
SISTER: Korri bāyith; **Aus** 196 boady, 175 boade, 190 pate
MAN: Korri murse; **Aus** 177 murdie
CHILD-1: Malto pillei, 10 pilla; **Aus** 97 bile, billa, 101 biller-biller
CHILD-2: Kui gunt, **Gondi** gunti; **Aus** 131 gundoo, 152 candoo
CHILD-3: Kaikadi mid.ā; **Aus** 52 mitha-burlu, 51 mootha
SON/YOUNG MAN: Malayalam marri, **Kuruth** mār; **Aus** 145 maura, 62 meroo
SUN-1: Gondi khukkyā, **Brahui** chikka; **Aus** 89 koagigi, 169 koke, 176 koogee
SUN-2: Tamil binkō; **Aus** 135 boong-jouelbee, 205 boogil, 134 bangala
WATER-1: Kui, Gondi tenni; **Aus** 201 teeni
WATER-2: Telugu vellam; **Aus** 214 A, 214C wolla, 181 wollee, wollum, 94 wadda
WATER-3: Tamil amm; **Aus** 131/142/154/174 ammoo, 156 amu
WATER-4: Kuruth dīr; **Aus** 6 dilli-dilli
GO/WALK-1: [see **FOOT**] **Telugu** po(ga); **Aus** 165 bego
GO/WALK-2: Tamil, Korri kalā; **Aus** 19 koola, 21 gooley
EAT-1: Malto, Kui, Brahui tinnu, **Malayalam** tin, **Kannada** tinu; **Aus** 46 tina, 49 tyena, 120 diana, 211 thianang
EAT-2: Tamil mōkhī; **Aus** 40 mungee, 214B maichimiak
COME/WALK: Tamil, Korri bara, **Malayalam** vara, **Malto, Kui, Gondi, Telugu** va; **Aus** 137 a-ber, 73 para-poo, 189 warre, 8, 9 wa-thi
YES-1: Gondi hāl; **Aus** 69**Aus** ka, 159 ha-ha
YES-2: Kaikadi a; **Aus** 41 a
NO-1: Tamil alla; **Aus** 155 alla
NO-2: Tamil mal'ā, **Korri** mala; **Aus** 102 malloo, 104 mallo; ***Tas Miligan*** *mallya leah*
NO-3: Kannada lēdu; **Aus** 2 leita, leiter

TAMIL COGNATES

PELICAN: T kūlei, kadā; **Aus** 181 goola, guleala, 175 kuliallu, 190 koolay, 190 karlie, 214A kati-n
CROW: T kākkei; **Aus** 28 koko, 11 karko
EGG: T muttei, **K** motte; **Aus** 120 meto
FISH: T mīn; **Aus** 194 mena, 214B mani, 214D munni, 17 miye
FLY: T oara; 27 booara; ***BNG Kauralaig/Saibai*** *buli*
SNAKE: T pāmbu; **Aus** 156 bumba
SISTER-1: T akkāl (elder); **Aus** 48 karoo, 97 koolakalla (elder & younger)
SISTER-2: T tha-makkei [tha-honorary prefix]; **Aus** 84 maiko, 85 meeka, 87 maik (elder)
BROTHER-1: T tha-meiyan; **Aus** 201 mia, 182 moen

BROTHER-2: T thambi; **Aus** 120 tambua (younger)
HEAD: T mandei; **Aus** 99 munda
HAIR-1: T mudi; **Aus** 6 moder; ***And Önge māūdé***
HAIR-2: T kūnthak; **Aus** 171 condur, 152 kuttar
GRASS-1: T pul, pullu; **Aus** 10 peela, peelan; 6 bolea, 63 burree
GRASS-2: T krāy; **Aus** 149 karra, 40 korra, 50 koola, 17 gila, 51 goola; ***And Chárіar*** *chálu-taich*
TONGUE: T nāru; **Aus** 116 nabbie
BREAST: T kongei; **Aus** 208D chongo, 208G chaang, 204/207A chang
BONE: T mul; **Aus** moolaḷe, modlallie, 75 mudda
SKIN: T thōl, tholi; **Aus** 48 dulla, 46 dalla, 55 dula, 114 thilly
GUTS: T kudal; **Aus** 171 giddirra
LIGHT: T velichham; **Aus** 210 werrook
COLD-1: T peleiya; **Aus** 40 pyala, 63 pialla
COLD-2: T ārina; **Aus** 90 woorine, 171 waring
COLD-3: T kulir; **Aus** 181 karil, 149 kirroo
FOREST/WOOD: T kādu; **Aus** 179 gate, 178 gallee[17]
HILL-1: T malei; **Aus** 23 moolan, 106 meri
HILL-2: T mēdu, modu; **Aus** 99 minde
HILL-3: T kundu; **Aus** 166 kunda, 16 kata, 18 katta
STONE: T kal, kallu; **Aus** 108 koola, 181 gulla, 176 gooroa; ***BNG Kauralaig, Saibai*** *kula,* ***Kauralaig*** *kōla;* ***GNG Kai*** *gala, gola*
BARK: T pattei; **Aus** 42 peeta, 24 booto, 147 bittey, 63 patta
BAD: T athatha; **Aus** 28 thaṭa
FOOD: [see WATER, EAT]: T thīni; **Aus** 213 tunnam 190 dinu-ng, dana
SLEEP: T urangu; **Aus** 10 warungo, 190 werrigoo
DRINK: T kudi; **Aus** 107 kootha-ngo, 126 kudge-ogoo
SEE-1: T pār; **Aus** 170 parrari, 190 pirroo
SEE-2: T their; **Aus** 138 telli-mulla, 140 tilly-knukela; ***And Púchikwar*** *ir-tilu,* ***Júwoi*** *re-t'liu,* ***Kol*** *er-tīlu*
SIT: T kunthu; **Aus** 106 kuṇda, 159 gundower
WHERE?: T enge; **Aus** 147 anga, 83 yangi, 174 ingia
FULL-1: T niranda; **Aus** 55 narpoo
FULL-2: T miuli; **Aus** 150 mulea, 177 mulla-mulla, 10 maroo
LARGE-1: T perum; **Aus** 44 pirma; 46 pirna; ***GNG 5 boro; BNG 47,48*** *baru-ka*
LARGE-2: T periya; **Aus** 46 piarree, 140 piala
SMALL: T podi; **Aus** boti-ne, 150 pit, 16 poto-n
DEAD: T patta; **Aus** 58 baạd-lookoo, 167 bootir, 185 boote, 145 boonda
EARTH: T mannu; **Aus** 125 mannie; ***Aus*** *71 mūndīe;* ***GNG 5*** *moṇdam, 6 manidam, 7 mandam*
TREE/WOOD: T maram; **Aus** 197 murru, 102 mooroo, 126 moora
SMOKE: T pohei; **Aus** 23 poohey, 32 booey
CRAYFISH: T kalliral; **Aus** 205 keler
TURKEY: T vankoli; **Aus** 39 wongarra
DARK: T irul; **Aus** 92 arreal
TODAY-1: it'téi; **AUS** 60 yeth, 65 yatto, 38 il-ytta
TODAY-2: T in'dí; **AUS** 47 untie
DAY/SUN: T ellei; **AUS** 13 ely, 190 eery, 181 eri
TOMORROW: T nalei; **AUS** ? noolar
SEE: T nokku; **AUS** 207 C naako, 190 nagoo, naagi, 47 nakkoo
CANOE/SHIP-1: T kappel; **AUS** 24 kibera; *GNG 5, 6, 8 kabuṇ, 7 χubun*
CANOE/SHIP-2: T kalam; **AUS** 209A, 209B korom
DARK/GROW DARK: T ḳaru; **AUS** 131, 10 koora
LIGHT: T vilakku; **AUS** 210 werrook; **And** 4 ár-lid-wálaich
INCREASE, BIG-1: T migu; **AUS** 124 mooga, 113 muchan
INCREASE, BIG-2: T mettu; **AUS** 190 mootoo, 179 mulla-mulla

[17] Trombetti. demonstrates the phonetic law: l=d, l=t elsewhere.

KANNADA COGNATES

MOUTH: K bāyi; **AUS** 177 be, 142 beea
ELDER BROTHER: K anna; **AUS** 142 att-ana (att is honorific prefix)
LARGE: K dadda; **AUS** 29 dudar
SEE: K nōdu; **AUS** 88 nithe, 188 natan, 178 nad, 161 natha
HEAR: K kēlu; **AUS** 107 kurra, 191 gorai, 194 koori [ear]
STAND/SIT: K nillu; **AUS** 196 nulli, 181 naree
WHERE?: K yelli; **AUS** 171 yella, 184 yilla, 172 illy, 173/178 ille
THREE: K mūru; **AUS** 64 murra, 14 marronoo
FIRE: K ur-i; **AUS** 37, 38 oora, 39 ooraa
OLD: K kiro; **AUS** 14 kyerra, 155 kiara, 140 kaera
EAR: K kêl; **AUS** 35 goolaya, 193/194 koori, 191 gora
MANY: K pal; **AUS** boola (v. widespread); ***And 4 ár-púlia-da***
BOY: K mag-an; **AUS** 170 mugee; 190 makkoo
MOTHER/ELDER SISTER: K akka (elder sister) = **AUS** 212 yakkan, 210 yackan (**MOTHER**)
WIND: K karr-u; **AUS** 190 gera, girar, kerare, 215 karrie

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Dravidian: R. Caldwell, A comparative grammar of the Dravidian or South Indian family of languages
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ERRATA

-AND = Andamanese, AUS = Australian, BNG = British New Guinea, GNG = German New Guinea, TAS = Tasmanian
MOTHER-9: AND Bálé in, **Púchíkwar** in-da, **Kol** in-le; **AUS** 152 yuna, 52 unu; **BNG Koiari** ine;
WIND-5: AUS 208H – mai-a; 176 meen, **BNG ?**
THREE-2: AUS 51 wunnoo; **GNG Manikam** winoya

GENERAL DRAVIDIAN COGNATES

BELLY/STOMACH-1: Kui varag, **Gondi** vārga; **Aus** 11 waelgo, 12 wilguo; *GNG **Wenke** gulegim*

TAMIL COGNATES

LARGE-1: T perum; **Aus** 44 pirma; 46 pirna; *GNG **Bongu** boro; **BNG Kupele, Meroka** baru-ka*
EARTH: T mannu; **Aus** 125 mannie; ***Aus** 71 mūndie; **GNG Bongu** moṇdam, **Manikam** manidam, **Bogadjim** mandam*
CANOE/SHIP-1: T kappel; AUS 24 kibera; *GNG **Bongu, Manikam, Kadda** kabuṇ, **Bogadjim** χubun*
LIGHT: T vilakku; **AUS** 210 werrook; **And *Bálé*** ár-lid-wálaich

KANNADA COGNATES

MANY: K pal; **AUS** boola (v. widespread); ***And Bálé ár-púlia-da***

MUNDA AT MEHRGARH??? – POST-CONFERENCE THOUGHTS

Firstly, many thanks to Hal Fleming and Michael Witzel for their generous invitation. It was an honour and pleasure to meet some of the leading specialists in the world in their respective fields, although meeting them did make me feel very like an amateur in the worst sense of the word.

Secondly, I would have liked to have mentioned something about John Lukacs' (Univ. Oregon) work on dentition at the Mehrgarh site. He kindly sent me pdfs of the following papers from the 1980s and 90s:

-Dental Morphology and Odontometrics of Early Agriculturalists from Neolithic Mehrgarh, Pakistan, J.R. Lukacs, 1986.
- Dental anthropology and the origins of two Iron Age Populations from Northern Pakistan, John R. Lukacs, "HOMO", Vol. 34, Pt. 1, 1983.
- Hegelian Logic and the Harappan Civilisation: an investigation of Harappan biological affinities in the light of recent biological and archaeological research - Brian Hemphill/John R. Lukacs, South Asian Archaeology, 1991.

As an outsider to the field of Indian prehistory, my impression of it is a rather dismal one on account of the lack of good quality archaeological evidence by comparison with Europe. I nevertheless wonder whether these three papers are giving us some important clues on the linguistic prehistory of the subcontinent.

To collate the conclusions from these papers, particularly the Hegelian Logic one, which is far more discursive, Lukacs' results showed that Neolithic skeletons from Mehrgarh dating from around 6,000 BC were gracile Sundadonts and furthermore, are biologically very similar to humans at Bronze Age Inamgaon (1400-800 BC, Maharashtra), but completely different from humans in Chalcolithic Mehrgarh (4500 BC), which are in turn related to the late-Harappan inhabitants of Cemetery H and post-Harappan Timargarha (1400-800 BC), as well as to the Tepe Hissar 3 (NE Iran, 3000-2000 BC) site. Furthermore, the inhabitants of Mohenjo Daro link to neither.
Furthermore, the Sarai Khola (N. Pakistan 260 BC +/- 50) site appears to be a migration from the West but a population which differs from that of Timargarha, and furthermore, its age was revised down from the previous 3000-2000BC.

Now, if we assume for the purpose of argument that genes and languages form a one-to-one correspondence, it appears that we have 3 language groups:

Language A was spoken by hunter-gatherers in Neolithic Mehrgarh and something related to language A was still being spoken in Maharashtra around 1000 BC. At Mehrgarh itself, language A was displaced by an incoming population in the $6^{th}/5^{th}$ millennium, who turn up in Chalcolithic Merhgarh and are ancestral to 3^{rd}-2^{nd} millennium Harappa, who spoke Language B, which also maps to end of 3^{rd} millennium Tepe Hissar 3 in NE Iran,.

The inhabitants of Mohenjo-Daro spoke language C, unrelated to either A or B. Perhaps there is a language D which came into the Punjab in the first millennium and represents the populations of Sarai Khola although it seems too late to me to be "the Aryan invasion", leading me to suspect that it is probably just another branch of IE.
My proposed solution to this puzzle is as follows:

Language A appears to be indigenous to India and its populations show dental links to SE Asia. I note the Mother Tongue discussion on Nihali decided it was probably related to Munda, and its speakers are located relatively close to the Inamgaon site in the North of Maharashtra so I suggest that Nihali and Language A are genetically related to each other,

(and by extension to Munda, assuming that the Nihali-Munda link is correct) and represent a dispersion of an ancestral population from somewhere in India (probably late Ice Age/Mesolithic). It is this link to Central India that leads me to rule out Burushaski as a candidate. Perhaps it was just spoken in a region for which there are no data points in Lukacs' sample.

Language B comes in from Northern Iran but is linked to Harappa and Cemetery H, which is usually identified as Indo-European. Lukacs follows the conventional wisdom and assumes it is Dravidian and that Tepe Hissar represents an Elamite-speaking population. I really wonder about this since I think Tepe Hissar is on the fringes of the Elamite empire both geographically and in terms to the number of artifacts found there (notably seals). It looks more to me as if the Dravidians occupied the lower Indus Valley – probably centred on Mohenjo-Daro. This would explain why Brahui is where it is (i.e. not that far away from Mohenjo-Daro), as well as the presence of a Dravidian substrate in adjacent Indo-European languages like Nuristani[1]. Conversely, the idea that IE speakers come down from NE Iran in the 5th millennium and first encounter speakers of a Munda-like language would appear to fit with Michael Witzel's observation that the oldest loans into IE are Munda/an unknown language.

In other words, the Indus valley civilization arose from a double occupation, IE speakers upstream and Dravidian downstream (rather like Mesopotamia – with Akkadians and Sumerians), which caused the wide area previously occupied by speakers of some Munda-like language to shrink into C. India. It should be clear that this is a very different situation from Europe, where this kind of Neolithic/Chalcolithic demographic discontinuity appears to be absent. And if the Indus Valley was a 'bilingual' civilization, what are the implications for the decipherment of its script? Was this a situation analogous to Chinese/Japanese script?

I would offer the above as a working hypothesis for further discussion and would emphasise that it is nothing more than my attempt to fit the conclusions of these three papers together. It is thus the parting shot in an attempt to start a discussion group. In particular, I would suggest a discussion of the following issues:

- Do experts in the field agree with my interpretation of the data in these papers?
- Is there a Dravidian substrate in other Indo-Iranian languages spoken further North?
- Where does the dental evidence from Mohenjo Daro point, since it appears to be anomalous?
- Does anyone have a model for the location of populations in Ice Age India. An analysis of glacial refuges in Europe allows us to build some kind of conclusions about population movements there. Can we do the same for India? Do we get expansions from identifiable foci? If anyone wants a copy of the original papers cited please e-mail me at jonatas9@yahoo.com.br.

Jonathan Morris.

[1] Frank Southworth – personal communication.

NEW LIGHT ON THREE SOUTH ASIAN LANGUAGE FAMILIES

Franklin C. Southworth

0. Introduction. This paper is a discussion of new data on three of the oldest known language families of South Asia. Section 1 discusses a modified version of the Grierson Hypothesis of "inner" and "outer" Indo-Aryan which was first proposed in Southworth 2005a. Section 2 discusses new interpretations of the subgroups of Dravidian, along with archaeobotanical data on the Southern Neolithic Archaeological Complex (SNAC) and other older evidence, and suggests a possible narrative for Dravidian prehistory. Section 3 proposes, on the basis of their distribution in modern Indo-Aryan, that a group of words of unknown origin which appear in Turner's *Comparative Dictionary of the Indo-Aryan Languages* (CDIAL) most likely originated in the prehistoric, pre-Indo-Aryan language(s) of the Indus Valley. The implications of this assumption are examined, particularly in terms of the linguistic properties of the presumed Indus language(s).[1]

1. Indo-Aryan

1.1. Background. It is generally accepted that Indo-Iranian (IIr), a language grouping that includes the Indo-Aryan (IA), Iranian, and Nuristani languages, is a branch of the Indo-European (IE) language family. Except for Tocharian, a now extinct group of languages spoken earlier in Chinese Turkestan, IIr is the easternmost branch of IE. The three sub-branches of IIr are considered to be derived from an unattested, but reconstructible, language known as Proto-Indo-Iranian (PIIr). For reasons which cannot be discussed in detail here, it seems probable that the Indo-Iranian languages moved into their present locations at some time in the late third--early second millennium BCE. Evidence for these statements is presented in Witzel 2001, 2005, among other sources; but see 1.3 below for discussion of an alternative history.

In any case, this paper, which focuses on languages of South Asia, is concerned with the Indo-Aryan languages only from the time they make their appearance in the subcontinent, beginning with the evidence of the Rigveda. The Vedic period as a whole (Witzel 2005:2) has been dated roughly between 1500 BCE (after the end of the Indus Valley Civilization, and before the advent of iron) and 500 BCE (before the time of the Buddha).[2] In the Rigvedic period, the texts reflect a location in the Panjab, i.e. the northern Indus Valley, whereas the geographical horizon of the later Vedic texts extends gradually eastward, eventually reaching as far as northern Bengal (OIA Anga). The Old Indo-Aryan (OIA) period includes the language of the four Vedas as well as the later Epic and Classical varieties of Sanskrit, and is followed by the Middle-Indo-Aryan (MIA) period, which began sometime in the second half of the first millennium BCE, before the Buddha's time, and the Modern Indo-Aryan (NIA) period, which began around 1000 CE.

1.2. "Inner" and "outer" Indo-Aryan. The OIA and MIA texts depict a movement of Indo-Aryan speakers eastward from the northern Indus Valley to the Gangetic plains, a movement which remained, as far as the texts are concerned, largely north of the Vindhyan complex, a series of

[1] See Appendix B for a list of abbreviations.

[2] This dating is disputed by the proponents of the Out-of-India theory (see 1.3 below).

hills and plateaux which run across central India from the west coast nearly to the Bengal delta. It has been generally presumed until recently that those Indo-Aryan languages spoken to the south of this barrier (Marathi, Halbi, Oriya) are the result of southward movements from this northern "mainstream". While this is probably partly true, evidence from the modern languages seems to add another dimension to the story.

Sir George Grierson, the compiler of the *Linguistic Survey of India* (LSI), proposed a genetic division of the NIA languages into three major groupings: inner or midland, intermediate, and outer, as depicted in Figure 1.

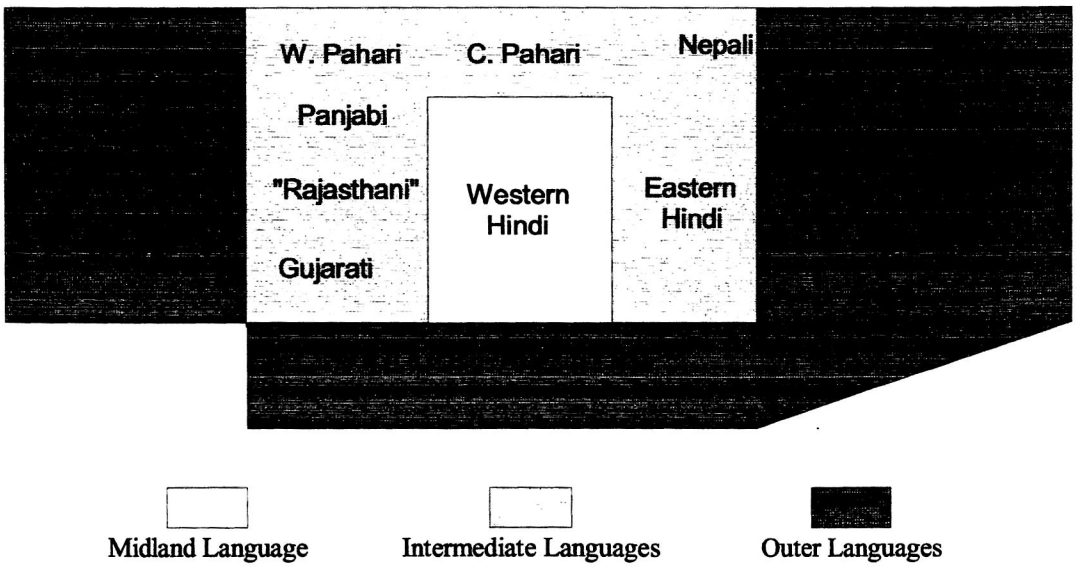

Figure 1. Grierson's view of Indo-Aryan
(after Masica 1991:453, with permission)

While Grierson altered some details of membership in the different subgroups at various times, he retained the belief that the eastern languages (Bangla, Assamese, Oriya, and "Bihari") were more closely related to the southwestern languages (Sindhi and Marathi-Konkani) than either of these groups was to the central group of languages (Western Hindi, Pahari, Nepali). While this "Grierson hypothesis" has been subject to severe criticism--some of it deserved--and has been generally rejected by linguists working on South Asian languages (see e.g. Masica 1991: 446-51), Southworth (2005:126-92) has reexamined the evidence and proposed a modified version of the hypothesis.

Figure 2 is a schematic isogloss map which shows that a number of major phonological and morphological innovations are shared by the eastern languages with Marathi-Konkani, and to a lesser extent with other southwestern NIA languages, Sindhi and Gujarati. This evidence could be explained by the assumption of a two-pronged eastward movement of Indo-Aryan speakers: in addition to the attested "mainstream" movement from the northern Indus Valley

to the Gangetic plains, a second movement may have proceeded from the southern Indus Valley (Sindh) into the Deccan and across the Narmada Valley to the east.

This proposal, based primarily on linguistic evidence, was formulated in the 1980's, though it did not appear in published form until 2005. (See Southworth 2005a:126-92 for details.) It has recently received possible support from archaeology:

> Beginning in the late third millennium BC and continuing throughout the second millennium BC, many, *but not all*, Indus Valley settlements, including urban centers, were abandoned as a cultural response to the environmental "crisis" described earlier... [during the same period, survey data show] a gradual and significant population shift from the Indus Valley eastward into the eastern Punjab and Gujarat... This is a significant human population movement which parallels that attributed to the mid-second millennium BC and described within the Vedic oral tradition. (Shaffer & Lichtenstein 2005-85-6)[3]

This population movement, as described by Shaffer & Lichtenstein, continued for a millennium or more. "By the early Iron Age [roughly the last quarter of the second millennium BCE]... the habitation area of sites is only 8 percent of the habitation area of sites occupied during the Harappan cultural period" in Cholistan (2005:86), and "...a significant population influx into the eastern Punjab occurred between the Harappan and Late Harappan cultural periods" (2005:89). A similar movement took place between Sindh (2005:91) and Gujarat (2005:92).

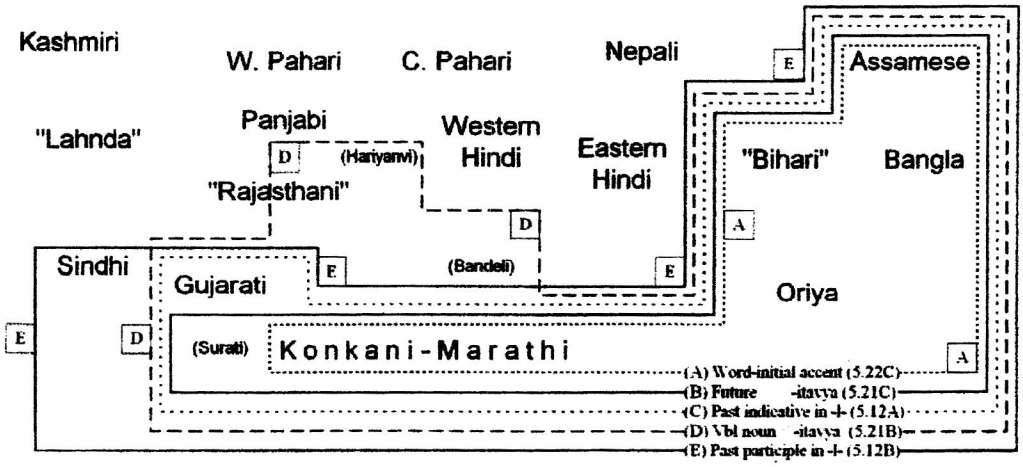

Figure 2. Defining isoglosses of "outer" NIA
(from Southworth 2005a:147, with permission)

The eastward movement of Indo-Aryan speakers was presumably part of this larger population shift, though according to the accepted chronology of Indo-Aryan, the movement of the northern Indo-Aryan speakers should be placed in the late second--early first millennium BCE.

[3] The environmental crisis referred to here included increasing aridity in the Indus Valley in the latter half of the third millennium BCE, followed by a diversion of the waters of the Ghaggar-Hakra (Sarasvati) River eastwards in the early second millennium BCE, accompanied by increasing tectonic activity in Sindh and elsewhere (2005:84).

As to the speakers of "outer" Indo-Aryan, it is possible that they were already present in Sindh during the Rigvedic period,[4] in which case they might have been part of the movement from Sindh to Gujarat at any time during the period specified by Shaffer and Lichtenstein. Allchin points to the existence of substantial settlements in Central India and the Deccan which go back to the second millennium BCE, and suggests that the rise of cities in these regions may have involved "indigenous populations contributing their own important element, alongside the possible stimulus provided by movements of peoples originating in the north or northwest" (Allchin 1995:134).

Though the movement eastward from the Indus was presumably stimulated by a number of ecological factors as noted above, the continued eastward movements of northern IA (as evidenced by the Vedic and post-Vedic texts) and of southern IA (suggested by the linguistic links between southwestern and eastern languages shown in Figure 2) may have involved other factors, such as the expansion of an agricultural population. This "inner-outer" hypothesis still remains a hypothesis, waiting on the one hand for scholarly reactions to it, and on the other hand for archaeological or other evidence which might support or conflict with it.

1.3. A note on the "Out-of-India Theory". *The Indo-Aryan Controversy* (Bryant & Patton, eds., 2005) is one of a number of recent publications challenging the prevailing view of the position of the Indo-Iranian languages in the European family, and particularly the view that these languages originated outside the Indian subcontinent. This challenge appears to be directed not at the language question as such, but at the implication which some people appear to have drawn from it, namely that Indian or South Asian civilization is somehow derivative of western civilization.[5] While this implication does not necessarily flow from the linguistic facts, it is perhaps understandable that those who resent the implication would like to negate the prevailing Aryan[6] Migration Theory (AMT), as it has come to be called. The resentment may be directed primarily against archaeologists and historians; nevertheless, the existing linguistic evidence constitutes an obstacle to formulating any viable alternative to the prevailing view.

It is not unthinkable that new evidence might be mustered which would overthrow the prevailing view of Indo-European linguistic history, including the history of Indo-Aryan. However, in order to be acceptable to the scholarly world that evidence must be presented in terms which are consistent with the principles of historical linguistics which have been developed over the last century and a half or so--and are continually being developed. Linguistics is a highly technical field, and while linguists may--and often do--disagree on specific points, such as the histories of particular words, linguistic discourse is made possible, as in any scientific field, by a general agreement on certain principles. For example, observations of sound changes in hundreds of different languages have led historical linguists to recognize that the sounds of a language change within certain limits. For example, Latin s

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[4] Allchin speaks of "relatively more pronounced Iranian or Central Asian traits in Chanhu-Daro, a Harappan site in southern Sindh, in the period 1700-1200 BCE (Allchin 1995:49).

[5] As Shaffer & Lichtenstein put it, "For two centuries scholars concentrating on the South Asian data have described an Indo-European/Aryan migration/invasion into South Asia to explain the formation of Indian civilization" (2005:97).

[6] In the interest of accuracy it is preferable to use the term "Indo-Aryan speaker(s)" or "IA speech community" rather than "Aryans" or even "Indo-Aryans".

between vowels changes to r, as seen in the alternation between these two consonants in aes 'copper', genitive aer-is; flōs 'flower', genitive flōr-is; es-t 'is', er-it 'will be'.[7] There are exceptions to this rule, many of which can be explained by particular circumstances: for example, in words like rosā 'rose' and miser 'unhappy', where r occurred in an adjacent syllable, the change was inhibited; words like nausea 'seasickness' and cisium 'light two-wheeled cart' did not undergo the change because they were borrowed from Greek and Celtic, respectively, after the change had run its course (for details see Niedermann 1953:94-5). While most such rules have exceptions, and while there is often a residue of exceptions which are not (yet) explained, the assumption of *regular sound change* is a useful heuristic principle (a) because it leads the investigator to keep searching for possible sub-rules to explain the exceptions, and (b) because it has occasionally led to *predictions*, which were later confirmed by new data (see below for an example).

In describing the sound changes between two linguistic stages, the historical linguist formulates sound laws or sound rules for the particular case; for example, the change of Latin s to r can be described by the following sound law:

> Latin intervocalic s -> r when there was no r in an adjacent syllable. The change was complete by the middle of the 4th century BCE.

Such sound laws are not written in granite. They are empirical statements of relationships in the data, and they can be changed either in response to new data, or when more parsimonious descriptions of the same data are found. The only requirement is that they be applicable to the largest possible amount of data with maximal economy of statement (Occam's razor).

The assumption of regular sound change makes it possible to reverse the direction of linguistic history and reconstruct earlier forms of language when suitable data are available. For example, on the basis of comparisons like OIA bharāmi 'I bear': Gk. phérō: Lat. ferō, OIA patiḥ 'lord': Gk. posis, OIA mātā 'mother': Gk. mētēr, OIA napāt 'descendant': Lat. nepōs 'grandson' (genitive nepōt-is), Indo-Europeanists reconstructed a hypothetical language known as Proto-Indo-European (PIE) containing the vowels e/ē and o/ō (among others) in words like *bʰerōmi 'I bear' and *potis 'lord'.[8] In order to account for the differences between PIE, the presumed parent language, and the daughter languages OIA, Greek, Latin, etc., sound rules like the following were formulated: (a) PIE e/ē and o/ō -> OIA a/ā;[9] (b) PIE bʰ -> OIA bh, Gk. ph, Lat. f, etc.; etc.[10] Note that PIE contains features from various languages: the forms cited here, for example, show the "richer" vowel system of Greek and Latin, not the a/ā of OIA, whereas the consonants include the bh of OIA (written bʰ) which is not found in the other IE languages.

How do we know that our reconstructions are correct? We cannot of course have any certainty about this, unless we happen to recover a text which corresponds to our reconstructed language. Needless to say, this has hardly ever happened, though the discovery of new

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[7] Varro, a Roman grammarian of the first century BCE, mentions that a number of words which were originally spoken with an intervocalic s were later spoken with r: "...in multis verbis, in quo antiqui dicebant s, postea dicunt r...*foedesum foederum, plusima plurima, meliosem meliorem, asenam arenam*" (cited in Niedermann 1953:95).

[8] The asterisk is used in historical-comparative linguistics to denote that forms are hypothetical or unattested.

[9] The OIA vowels e and o derive from diphthongs ei/oi (-> ai -> e), eu/ou (-> au -> o), as well as other sources. Indo-Europeanists do not now reconstruct a vowel a in Proto-IE (see e.g. Beekes 1995:124 ff.).

[10] These forms and rules are oversimplified for purposes of illustration; for details see e.g. Beekes 1995.

languages in a family has occasionally confirmed parts of a reconstruction. For example, in 1879 the French linguist Ferdinand de Saussure proposed that certain sound correspondences in the older IE languages could best be accounted for by reconstructing a set of unknown sounds--later called laryngeals (sounds formed by narrowing the larynx)--preceding certain vowels. At first purely hypothetical, these sounds turned out to have a basis in reality when documents in Hittite were deciphered in the early twentieth century, turning up correspondences like Hitt. **peḫur**: Gk. **pūr** (English **fire**), Hitt. **ḫanti**: OIA **anti** 'near, before': Gk. **anti**: Lat. **ante**; Hitt. **ḫuiszi**: OIA **vasati** 'resides': Eng. **was**. In these and other cases, the Hittite **ḫ** occurs in the places where it was predicted by de Saussure. (See Beekes 142-8 for more detail; also Witzel 2005:352, 2001:36.)

While the reconstructed forms of PIE and other proto-languages (such as PIIr) are always open to revision on the basis of new data and new insights, it is not sufficient to tinker with some of the sound laws and ignore others. A reconstructed language, like any real language, is a coherent system in which different parts are related to each other, sometimes in complex ways. When S. S. Misra (2005:206-8), in order to bolster the claim that Vedic Sanskrit is the original IE language and all the others are derived from it, proposes that the vowels **e/ē** and **o/ō** in the other IE languages are derived from Sanskrit **a/ā**, as opposed to the standard view (see above), he is not only adopting a position that was already considered and rejected by Indo-Europeanists in the 19th century; he is also proposing a sound law that fails to predict the vowels of the other (non-Indo-Iranian) IE languages--even though the vowels of these languages commonly agree with each other (with stateable exceptions).[11]

Similarly, Misra ignores the established Indo-Iranian sound laws in claiming that the Iranian languages are derived from Vedic Sanskrit. For example: a form like Vedic **sedé** (first person singular perfect middle of the verb **sad-** 'sit' <- PIE ***sed-**, cf. Lat. **sedere**, Eng. **sit**) is a regular descendant of a PIIr ***sa-zd-ai**, in which **zd** (<- **sd**) represents the "zero grade" of the root **sad** (with no vowel). The equivalent in Avestan is **hazde**. This and other similar forms show that Iranian has actually retained an older stage **az**, which was wiped out in OIA by the pre-Vedic change **az -> e**. As Witzel (2001:45) has pointed out, this form was subsequently generalized by analogy, yielding such forms as **mene** (from **man** "think") in addition to the expected **mamne**. This implies that Vedic has already progressed several stages beyond Avestan with respect to these forms.

Misra's attempt to reinterpret the evidence of Indo-Iranian loanwords in the Uralic (read "Fenno-Ugric") languages, to show that they resulted from out-migration of IA speakers, is unconvincing, as no criteria are provided for justifying the assignment of particular loanwords to particular linguistic stages such as PIIr, Vedic, MIA, etc. (v. Hock 1999, Witzel 2005:357-8).[12]

Another case of faulty methodology is seen in Misra's attempt to establish a relationship between IA and Dravidian (2005:191-8). Proof of genetic relationships between languages requires recurrent phonological correspondences in words of similar meaning--like the

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[11] Misra's claims, on this and other issues, have been answered with full technical details by Hock 1999; see also Witzel 2001, and Witzel's paper in the Bryant & Patton volume (Witzel 2005).

[12] It may be worth noting that one of these words, Saami **åriel, årjän** (from P-IIr **arya** 'Aryan') means 'southern, southwestern' (Misra 2005:200).

examples given above for the IE languages, which in fact were part of the original data that led to the discovery of the IE language family. In lieu of such evidence, Misra offers a list of phonological features shared between MIA and Dravidian, such as the voicing of originally voiceless intervocalic stops (192) and the assimilation of consonant clusters (193). These similarities have been noted earlier by many scholars, and have generally been regarded as possible evidence of some sort of areal convergence among South Asian languages (see e.g. Masica 1991:184-5). However, they carry absolutely no weight as evidence of a genetic linguistic relationship. Misra adds a few examples of similar Sanskrit and Tamil words, with no clear attempt to differentiate inherited words from loanwords.

Though his discussion provides no cogent evidence of a genetic relationship, Misra concludes with the following remarks:

> Therefore, a serious effort to compare Dravidian and Indo-Aryan (or Indo-European) should be made. This research will be successful and will conclusively prove that Dravidian and Indo-Aryan belong to one common source; there will be no scope to assume that Aryans came from outside and drove the Dravidians away to the South. (2005:198)

The sentence "This research will be successful..." seems to suggest that the writer views the result of the research as a foregone conclusion.

In his "Concluding Remarks" to the volume (468-506), Edwin Bryant devotes a good deal of space to the linguistic evidence, finding plausible and ingenious explanations for such things as the lack of inherited agricultural vocabulary in the Rigveda, the absence of references to the urban structures of the Indus Valley civilization in the oldest texts, and the very clear evidence of massive borrowing from non-IE languages even in the earliest Vedic. Bryant believes that "much of the evidence associated with the Indo-Aryans, whether philological, linguistic, or archaeological, can prove to be extremely malleable if one is prepared to consider it from different perspectives" (475). With regard to Misra's discussion of the Uralic loans (see above), he points out "how easily much of the linguistic evidence can simply be flipped around by those inclined to do so" (484).

It should not need to be said that an Out-of-India Theory is not well served by this kind of "flipping" of evidence. While the linguistic histories of IE and IIr languages are constantly under revision, any proposed revision must demonstrate rigorously either that it explains data not covered by the current theory, and/or that it explains the relevant data more parsimoniously.

Much of Bryant's discussion seems to be designed to refute objections to the notion that the Indo-Aryan languages originated in the South Asian subcontinent. Yet while he has perhaps succeeded in throwing doubt on some of the arguments which have been used *for* the migration theory, as well as some of those used *against* an Out-of-India Theory, at the same time he says that "there has been very little of significance offered so far in support of" an Out-of-India position (470). If there is a third position, he has not articulated it. This seems to leave us with a choice between an imperfect migration theory which, as Bryant acknowledges, "has by no means been disproved", and an Out-of-India theory which (for the moment, at least) is not supported by any empirical evidence.

While it may be worthwhile, as Bryant suggests, to examine the imperfections in the existing migration theory, that can be more meaningfully done when we have in front of us a concrete alternative proposal which accepts the principles of historical-comparative linguistics as delineated above. In the absence of any such proposal, some of us at least will find it preferable to proceed on the basis of what seems the most likely explanation of these early events, while remaining ready to examine any alternative proposal on its merits whenever it may appear.[13]

2. Dravidian.

2.1. Subgrouping. The subgroups of Dravidian, whose current locations are displayed in Figure 3, are: South Dravidian (SD), subdivided into SD1[14] and SD2[15]; Central Dravidian[16] (CD); and North Dravidian[17] (ND). The standard view of Dravidian is that SD, CD, and ND are coordinate branches, i.e. the tree representing the Dravidian family divides into three independent branches after the Proto-Dravidian (PD) stage. This view is based on the absence of structural innovations shared by any two of the main branches SD, CD, and ND (Krishnamurti 2003:492 ff.). On the other hand, the evidence for the ND and CD subgroups is not totally convincing.

The status of ND as a subgroup (Emeneau 1980b) is based on two shared phonological innovations, which provide minimal evidence,[18] and several shared morphological phenomena, some of which may possibly be retentions rather than innovations (v. Subrahmanyam 1971:527-8). While a number of linguists who have looked at the evidence accept that these are common innovations, they may not be adequate to prove that Brahui and Kudux-Malto form a subgroup in the strict sense, rather than merely belonging to the same part of a PD dialect continuum and sharing no structural innovations with languages of other branches.

---

[13] There are possibilities which might be looked into: for example, both Burrow (1970) and Tyler (1968) have published promising, though inconclusive, data for a Dravidian-Uralic relationship (see Krishnamurti's comment, 2003:43). These suggestions have not been followed up, even though a connection between Dravidian and Uralic might provide a new explanation for the Indo-Iranian loans in Fenno-Ugric, a branch of Uralic (see above). I am not proposing such a connection, but it is a possibility that might be pursued by linguists looking for alternatives to the Aryan Migration Theory. It seems, however, that there has been very little work of this kind among the supporters of the Out-of-India theory, and some seem to have chosen to view the linguistic evidence as irrelevant (see Witzel 2005:13-14).

[14] Tamil (Ta), Malayalam (Ma), Toda (To), Kota (Ko), Irula (Ir), Kurumba (Kb), Badaga (Ba), Kodagu (Kg), Kannada (Ka), Koraga (Kr), Tulu (Tu)

[15] Telugu (Te), Gondi (Go), Konda (Kd), Pengo (Pe), Manda (Md), Kui (Ki)-Kuvi (Kv)

[16] Kolami (Kl), Naikri-Naiki (Nk), Parji (Pa), Gadba (Ga), Ollari (Ol)

[17] Kudux (Ku), Malto (Mt), Brahui (Br)

[18] (1) PD initial ***k** appears as **x** (a "voiceless velar spirant", Emeneau 1980b:320) in Brahui and Kudux, and as **q** (a "uvular voiceless stop", Das 1973:14) in Malto, before all vowels except **i/ ī**. Since the conditioning factor is similar for all 3 languages (Ku-Mt add **u/ū** to the environments where the change does not take place), these have been treated as the same change in all 3 languages--but see Emeneau's footnote 1 (1980b: 327).
(2) PD ***c** appears as PND ***k** before the vowels **u ū e ē** (alternatively, "before non-low vowels", Krishnamurti 2003:500). Emeneau provides 7 cases, of which only 3 have cognates in all the ND languages. An additional change listed in Subrahmanyam 1971:527, viz. PD ***v-** > PND ***b-**, is regarded by Emeneau (1980b:320-21) as two independent changes. (See Krishnamurti 2003:493).

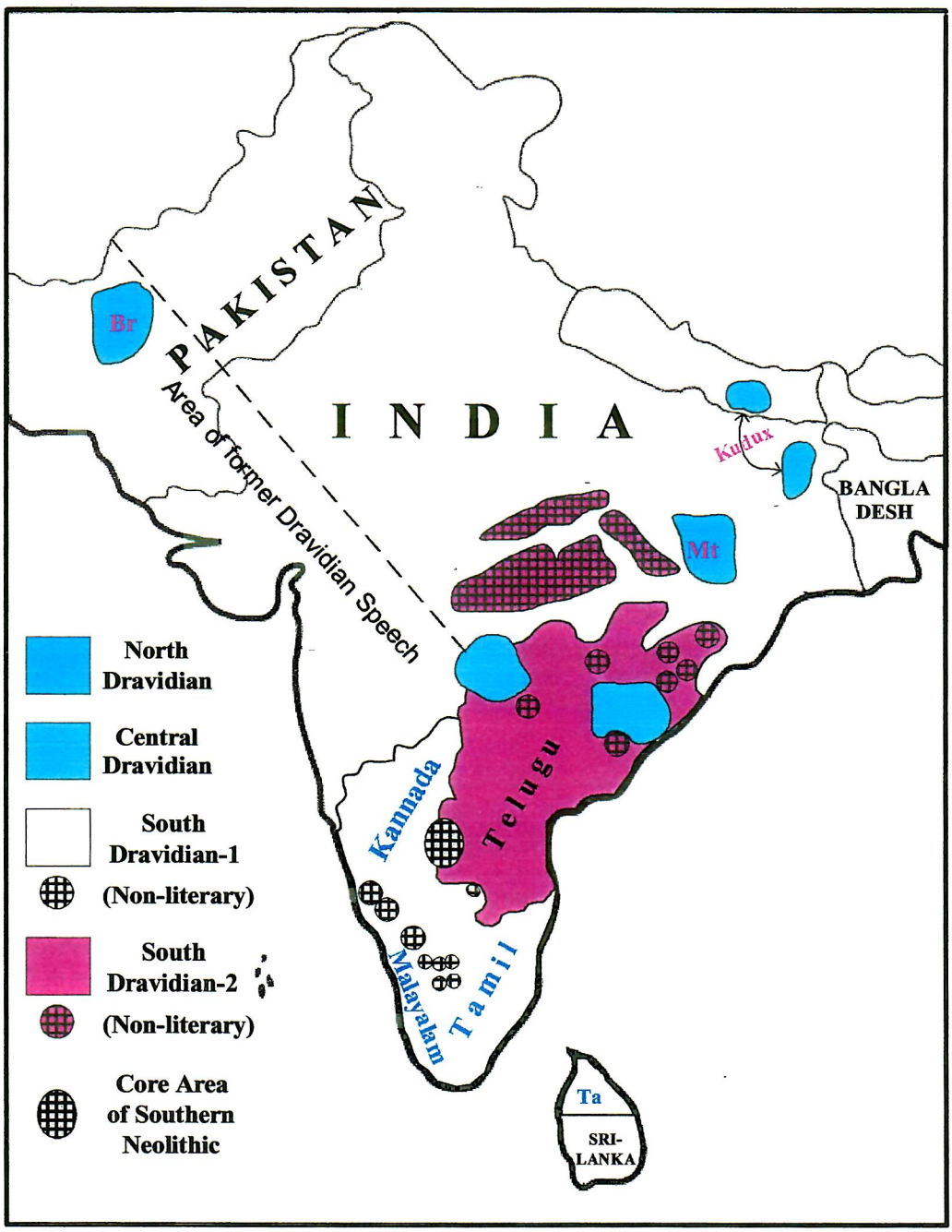

FIGURE 3. DRAVIDIAN

	Total	Br only	Br + Ku/Mt	Ku only	Mt only	Ku + Mt
ND + CD/SD	1063	143	124	283	202	311
ND only	223	---	11[18]	---	---	212

Table 1. Representation of ND cognates in DEDR

Another relevant factor here is the gap in vocabulary between Brahui and Kudux-Malto: columns 3 and 4 of Table 1 show that Brahui alone shares 143 entries with languages of the other branches (CD and/or SD), while it shares only 124 entries with Kudux and/or Malto. Thus Brahui shares only 46% of its total PD vocabulary (267 entries) with its sister ND languages, compared to 54% shared with one or more SD and/or CD languages to the exclusion of Kudux and Malto.[19] (If the Brahui items with question marks are excluded from the count, the difference is reduced to 49% vs. 51% respectively.[20]) On the other hand, Kudux and Malto together share nearly 800 entries with languages of the other branches, of which 283 entries have Kudux cognates only, 202 have Malto only, and 311 entries have cognates from both languages. Thus Kudux shares a total of 594 entries with CD/SD, and Malto shares a total of 513 entries, indicating substantially more shared history with the other branches for Kudux-Malto than for Brahui.[21]

Thus even though Brahui and Kudux-Malto appear to belong to the same branch of Dravidian (or at least to the same dialect area of the PD speech community), historically it makes sense to treat them as separate branches, by virtue of the fact that they have been separated for a very long period of time. This long separation may account, at least in part, for the difficulty in finding more shared innovations for all three ND languages.[22]

As for CD, Krishnamurti makes the following two statements:
(1) "There is no exclusive feature demarcating Central Dravidian but Kolami-Naiki and Parji-Ollari-Gadaba emerge as minor subgroups..." (2003:498);
(2) "The fact that Central Dravidian does not share any of the specific innovations attributed to South Dravidian and North Dravidian puts it in a group by itself" (2003:499).
These two statements seem to suggest that Central Dravidian is a *residual* group of languages, which is a subgroup only because it does not share any innovations with either of the other groups. This view seems to be contradicted by an earlier statement:
(3) "There are two features which are exclusive to Central Dravidian, namely F16 and F17" (2003:494).
Feature F16 is described as follows: "The Central Dravidian languages have introduced a tripartite gender system in the first four numerals in derivational morphology, like 'two men,

[19] Eleven entries contain Br cognates plus Ku and/or Mt cognates *without* any SD or CD cognates; these are not counted here, as there is no reason to assume that they go back to PD.
[20] This updates Emeneau's count (1980b:326), which was based on the original DED and found 108 entries with no other ND cognate vis-à-vis 86 entries with Ku and/or Mt, all including at least one cognate from the other branches (SD and/or CD). Thus the comparable percentages would be 44% vs. 56%. Emeneau also noted that entries with only Br plus Ku and/or Mt cognates numbered only 7, while Ku-Mt alone appeared in 152 entries.
[21] These figures are approximate.
[22] Krishnamurti disagrees: "The misleading time depth is caused by ... heavy borrowing from Balochi and Indo-Aryan. However, in terms of shared phonological and morphological innovations, it [Brahui] could not have been separated for more than a thousand years or so from Kuṛux-Malto" (2003:491).

two women, two things (non-persons)', although in other respects there are only two genders (masculine:non-masculine) in these languages" (Krishnamurti 2003:260). Feature F17 involves the creation of okk- 'one', a new form of the numeral apparently derived from a PD ***o(n)k** 'together', DEDR690(b). On the other hand, this okk- innovation is shared with Telugu (SD2), a fact which Krishnamurti explains in terms of a borrowing from Telugu by an "undivided stage" of CD. CD also shares the "generalization of *-*tt*- as the past marker" with SD2 (2003:497, 499). In this context Krishnamurti mentions other early borrowings from Telugu into Kolami-Naiki, a sub-branch of CD (2003:494-5). As with North Dravidian, the evidence for CD as a subgroup does not seem adequate to prove that it can be regarded as a strict subgroup, rather than a group of contiguous lects in a dialect continuum.

Another innovation, the development of a perfective participle in ***-c(c)i**, is shared by the Parji-Ollari-Gadaba subgroup of Central Dravidian with the entire SD2 group (Krishnamurti 2003: 498-9). These innovations, though only partially shared between CD and SD2, raise the question whether CD can be considered an independent branch of Dravidian, on a par with ND and SD. Though there is not sufficient evidence to posit a common stage of development for the South and Central Dravidian languages, it is clear that at some stage in the past these two branches were in sufficiently close contact that some innovations could cross the boundaries of the two subgroups. Thus CD and SD probably functioned to some extent as a single speech community at one time. In fact, Telugu is still in contact with some Central Dravidian languages, and Krishnamurti (2002) has also noted that the CD languages Kolami and Naiki retain borrowings from Telugu from a very early period. This means that CD and SD cannot be considered to be totally independent of each other. For this reason, in this paper only words with SD and ND cognates are considered to be reliably reconstructible to Proto-Dravidian.

2.2. Agriculture and food production in Proto-Dravidian.

In reconstructing the Proto-Dravidian terms for food production, three distinct phases emerge:[23]
(1) the earliest phase, representing the vocabulary shared by Brahui and other Dravidian languages;[24]
(2) the phase representing vocabulary shared by Kudux-Malto, SD and CD (called "early PD" in Southworth 2006);
(3) the phase common to CD and SD ("late PD" in Southworth 2006).

Phase 1: Of 117 reconstructible PD terms related to agriculture and food production, only the following 16 appear in Brahui: (numbers in brackets refer to the DEDR)
Animals: ***cū** 'call to dog' [2718], ***yāṭu** 'sheep/goat' [5152], ***kaṭ-V** 'buffalo/bull(ock)/ram' [1123], ***ivuḷi** 'horse' [500],[25] ***kākk-/kāvv** 'crow' [1425], ***korV-nk(k)** 'crane' [2125], ***el-i** 'rat' [833], ***nari-(kkV)** 'jackal/wolf' [3548], ***kav-uḷi** 'lizard' [1338],;

[23] This division into three stages was introduced in another form in Southworth 1995:266 ff., where they were referred to as PDr0, PDr1, and PDr2. Though based on a controversial view of the linguistic subgrouping, this three-stage division captures the actual historical sequence better than would a strict adherence to the linguistic subgroups, and is therefore being reintroduced here.
[24] All the words listed for Phase 1 have Brahui and SD cognates, and in some cases CD cognates in addition.
[25] Krishnamurti (2003:12) considers all the PD 'horse' etymologies doubtful.

Food plants: *ār/ar-akE 'food/fodder' [490], *kūli 'grain/ seed' [1906] (Br < IA?);
Operations and tools: *nūt 'to grind' [3728], *kaḷ to pluck/reap [1373], *mēy 'to graze' [5093], *mīṭ 'to drive (animals)' [4882], *vil 'bow' [5422].
Thus food production in Phase 1 probably involved primarily hunting and grazing of (domestic?) animals, with some processing of wild grains for food. There are no reconstructible names for specific crops.

Phase 2, which includes Kudux-Malto but not Brahui, adds the following 44 items:
Domestic animals: *ā(m/n) 'cow' [334], *er-utu 'bull/bullock/ox/steer' [0815], *ñāl- 'dog' [2916], *ver-uku 'cat' [5490];
Wild animals: *eḷ-V-ñc- 'bear' [857], *coṇṭṭ 'mouse' [2661], *muy-cc- monkey/baboon [4910], *uẓ-u-pp 'deer' [694], *mā-y 'large quadruped' (horse/sambur/deer/elephant) [4780], *ciṭ(r)/cir(k) 'squirrel' [2518(a)], *cey-t 'porcupine' [2776], *mīn 'fish' [4885], *kiṇṭ 'carp' [1947], *par-Vṇṭu 'bull-frog' [3955], *put-Vc 'dove/pigeon' [4334], *pok 'green pigeon' [4454], *pī-lV/cV/kV 'peacock tail' [4226], *mōc-/*moc-V-ḷ 'crocodile' [4952]; *ōn-tti 'bloodsucker lizard' [1053];
Trees and their products: *cīnt(t) 'date (tree/fruit)' [2617], *tāẓ 'palmyra or toddy palm, *Borassus flabelliformis*' [3180], *cin-tta 'tamarind, *Tamarindus indica*' (tree/fruit) [2529];
Cereals: *mañci-k 'grain/seed' [4639], *maṇṭ '(cooked) cereal' [4679], *kec 'cereal crop' [1936], *al-ak 'ear of grain' [0255];
Other food crops: *uḷḷi 'onion' [0705], *kic-ampu 'taro, *Colocasia esculenta*' [2004], *vaẓ-Vt 'eggplant/brinjal', *Solanum melongena* [5301];
Operations and tools: *uẓ-V ' to dig, to root up earth as pigs do' [0688], *teḷ 'to sift; to winnow' [3435], *nē(m)p 'to winnow' [3769], *kēt 'to winnow' [2019], *kaṭ 'to churn' [1141], *koy 'to reap, to cut' [2119], *unk 'husk, chaff' [637], *eru-kk 'to clear land' [824], *ar-V 'a plough' [198],[26] *kunt-āḷ 'spade, pickaxe' [1722];
Land: *kut-Vr 'low ground/field' [1700], *kam(p)a 'forest/jungle, uncultivated ground' [1228], *kar-V 'waste land/forest/jungle' [1285], *ñāl 'field/cultivable land' [2913], *kaḷ-am/an 'threshing-floor/field for tillage' [1376].
In this phase there is greater evidence for animal domestication, as well as greater emphasis on food production from the land. Plant domestication is possible, but not clearly present, at this stage. There are no words for specific cereal plants.

Phase 3, shared by SD and CD languages (see discussion in 2.1, last paragraph), adds the following 54 items:
Domestic animals: *naH-ay/att/-kuẓi ' (?wild) dog' [3650], *pill 'cat' [4180], *kHutt horse (<IA? cf. Skt ghoṭaka horse) [1711b], *kaẓ-ut-ay 'ass' [1364], *pan-ti 'pig' (domestic?) [4039],
Wild animals: *kor-V-nkk-/-ntt 'monkey' [1769], *koṭ 'bison, nilgai' [1664], *yĀnay 'elephant' [5161], *pul-i 'tiger' [4307], *pā(vu)k(k) '(wild) cat' [4106], *mūṅk-ūc 'mongoose' [4900], *et 'prawn/shrimp' [0517], *ñaṇṭ 'crab' [2901], *pur-/pūr-i 'peacock tail' [4367], *ñam-V-l 'peacock' [2902], *mañ(ñ)-il 'peacock' [4642], *kiḷ 'parrot' [1584], *carac 'snake' [2359], *pāmpu 'snake' [4085], *cer 'snake' [2816], *māc-un 'python' [4793], *uṭ-ump 'iguana' [0592];

[26] "Though there is no archaeological evidence for ploughs or ploughing in these sites, the linguistic evidence [in PD Phases 2 and 3] is strong enough to suggest that there was some activity that was in some way ancestral to ploughing, whatever it might have been, and that the meanings of these terms evolved over time along with the agricultural technology" (Southworth 2006:138).

Cereals: *(v)ar-iñci 'grain, seed' [0215, 5265, 5287];[27] *kot-V 'millet/ragi, Italian millet,[28] *Setaria italica, Panicum italicum, Panicum miliare'* [2163], *conna-l 'sorghum/maize, great millet, *Sorghum vulgare'* [2896];[29]
Other food crops: *koḷ 'horsegram, *Macrotyloma uniflorum'* [2153], *uẓ-untu 'urad, black gram, *Vigna mungo'* [0690], *min(t) 'black gram, *Vigna mungo'* [4862], *tu-var 'toor, *Cajanus cajan'* [3353], *pac-Vṯ/Vl 'mung, green gram, *Vigna radiata'* [3941],[30] *nū(n) 'sesamum, *S. indicum'* [3720], *cet-Vkk 'sugarcane' [2795], *cir/cīr 'chironji (nut/tree), *Buchanania lanzan'* [2628], *irak 'jujube, *Zizyphus mauritania* Lamm.' [0475], *cuv 'fig; pipal, *Ficus religiosa'* [2697], *ñēṯ-al 'jambu, *Eugenia jambolana* Lamm., *Syzygium jambolanum'* [2917], *boy-Vl 'hemp/flax' [4535], *pīr 'sponge gourd, *Luffa acutangula'* [4224];
Trees: *tē(n)ku/ṭē(n)ku 'teak' [3452]
Operations/tools/receptacles: *ar 'to cut/sever/chop; reap, harvest' [212], *īk 'to pound (grain)' (CD), 'to husk/grind' (ND) [535], *po(ṇ)ṭṭ 'husk, chaff, skin' [4491], *ñān-kil 'plough' [2907], ?*puy-il 'ploughshare' [4282],[31] *komm 'receptacle for storing grain' [2117],[32] *toẓ-V 'animal-stall' [3256],[33] *mant-ay 'flock, herd' [4700(a)], *tūmpu sluice, drain [389], *ket-ay/-uvu tank [1980], *nūy well [3706], *kāl 'fish-hook' [1495], *cir-nk 'cattle-bell' [2515];
Land: *pol-am 'field' [4303]; *vāy/vay 'field for cultivation' [5258].

Innovations in agriculture at this level are suggested by names for a number of new food plants, including two millets (see notes 27 and 28), horse gram (*Macrotyloma uniflorum*), black gram (*Vigna mungo*), pigeon pea (*Cajanus cajan*), green gram/mung (*Vigna radiata*), sesamum (*S. indicum*), Cuddapah almond (*Buchnania lanzan* Sprengel), jujube (*Ziziphus mauritania*), and sugar cane (*Saccharum* sp.). There are still no reliable words for 'rice' at this stage. Other words connected with agriculture include new words for the plough, grain storage container, animal stall/pen, herd/flock, sluice/drain, tank, well, fishhook, and cowbell. Thus, while PD Phase 2 can perhaps be described as partly agricultural—practicing animal husbandry along with gathering and processing of food plants, but with very few identifiable names for specific crops—Late PD is clearly agricultural, as it shows a variety of names for crop plants, many of which are still grown in the area today, along with the necessary technological development for full-time agriculture.[34]

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[27] Though this word comes to refer to rice in several modern Dravidian languages, its multiple meanings in various languages make it unlikely that it was a straightforward term specifically referring to *Oryza* at this stage (see Southworth 2006:130).
[28] The specific cereal terms reconstructed for this word all refer to varieties introduced into South India at a much later date. Presumably the Dravidian forms descended from PD (III) *kot-V were transferred to the new arrivals as they supplanted the older varieties.
[29] Like *Setaria*, sorghum was also introduced from Africa and is found only in late contexts of the Southern Neolithic; the PD (III) term ***conna-l** was presumably later transferred to sorghum (see previous note). D. Fuller (p.c.) points out that "Loose-eared varieties of sorghum might...be linked to *Brachiaria*..."
[30] Cf. PD (Phase 3) ***pac** 'green' [3821].
[31] This word is suspect as it occurs only in Pa-Ga (CD) and Go (SD2), languages spoken in the same area of Central India.
[32] Originally apparently a word for storage basket, this word refers to a large receptacle for storing grain in Ka (SD1), Te (SD2), and Nk (CD).
[33] Ta 'cattle-stall', Ma 'stable, sheepfold, goat-pen'; Ko 'buffalo-pen'; To 'corral, pen'; Pa '(animal) shed'.
[34] The three phases of Proto-Dravidian are followed by Proto-South-Dravidian (PSD) and Proto-South Dravidian-1 (PSD1), for which see further below.

Phase 4, shared by all the SD languages but excluding the SD languages, adds another 30 or so items including domestic animals (chicken, buffalo), trees (jackfruit, arecanut), fruits (orange, citron lemon), crop plants (*Setaria italica*, fenugreek, cardamom), words for irrigation (tank, bund), land terms (farmland), implements (plough handle, ploughshare, grain measure, wheel, boat), and others. (For details see Southworth 2005a: Ch. 8, App. B.)

Phase 5 sees the division of SD into SD1 and SD2. (See Southworth 2005a: Ch. 8, App. C, for some items of PSD1 vocabulary.)

2.3. Dravidian and the Southern Neolithic Archaeological Complex. There is a close fit between reconstructed PD Phase 3 and Phase II (2300-1800 BCE) of the Southern Neolithic Agricultural Complex, both in terms of the general levels of material culture and technological development, and in terms of specific crop plants: 73% of the archaeologically identified plants of SNAC Phase II are matched by PD reconstructions. Of eight plants occurring only in Phase III (1800-1200 BCE) of the SNAC, seven are matched by PD reconstructions: three each by PD Phase 3 and 4 reconstructions, and one by a Phase 5 reconstruction.[35] The core area of Phase II of the Southern Neolithic is located on the present Karnataka-Andhra border, which is also part of the border between the SD1 and SD2 languages; the expanded area of the Southern Neolithic is all within the area in which South Dravidian languages are now found.

2.4. Dravidian borrowings in Old Indo-Aryan. Dravidian borrowings begin appearing in OIA in the mid-to-late Rigvedic period (ca. 1200BCE, see Witzel 1999:17-24). The identification of these borrowings has provoked intense debate from the early days of Indo-European linguistics. Witzel's discussion covers a number of the controversial cases; see also Southworth 2005a:69-78. The situation is complicated by the fact that there are numerous words which show similarities between Indo-Aryan and Dravidian, yet appear on full analysis to be possible cases of accidental resemblance: for example, OIA **carati/calati** 'goes, moves, walks' [CDIAL4686, 4715]: PD ***cal-/can*** 'go, pass, occur' [DEDR2781], both of which are deeply embedded in their respective linguistic histories; cf. also OIA **tan** 'self, one's own' [CDIAL5656]: PD ***tān/tan*** '(one)self' [DEDR3196] (v. Southworth 2005a:92, Witzel 1999:21).[36]

An argument implicit in the earlier work of many scholars, including the present author's, was that any OIA word without a viable Indo-European etymology could be regarded as a Dravidian loanword if a similar word existed in Dravidian, as long as that word was not an obvious borrowing from Indo-Aryan--on the assumption that Dravidian languages were present in the subcontinent earlier than Indo-Aryan languages. Two important findings have weakened that position: (1) Witzel 1999 has shown that there are no Dravidian loans in the earliest Rigveda, while there are numerous borrowings from other--as yet unidentified--languages, and (2) it has been recognized that the language(s) of the Indus Valley--which cannot have been Dravidian if point (1) is accepted--are a likely source of borrowings, especially for the names of local flora and fauna, into *both* Dravidian and Indo-Aryan. Thus while a word like OIA **kaṅka** 'heron' [CDIAL2595] might at one time have been considered plausibly derived from a PD

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[35] See Southworth 2006:136. This was incorrectly stated in the original article.

[36] For Indo-Aryan words, numbers in brackets refer to entries in CDIAL; for Dravidian words, to entries in DEDR.

*ko(r)-nk(k) 'crane' [DEDR2125], it is at least equally plausible that both words derive from an Indus language form ***kank-/kork** or the like.[37] (See further discussion of the Indus language(s) in part 4 below).

In order to prove Dravidian origin, it would be necessary (at a minimum) to show that a word is etymologizable in Dravidian, i.e. that it has a Dravidian derivational history or a particular semantic development, or that at least it shows a unique pattern of variation in Dravidian. Thus for example, OIA **kaṭu(ka)** 'pungent, bitter' [2641] may be regarded as a Dravidian borrowing because of the existence of a PD ***kaṭ** 'bite, sting, throb with pain; bitter' [1135]. PSD ***nakar** 'house, palace, town, city' [3568] has been proposed as the source of OIA **nagara** 'town' [6924] because of the presumed semantic development 'house' -> 'town' -> 'city' (v. Southworth 2005a:74). The derivation of OIA **kurkura** 'dog' [3329] from PD ***kur(-kur)** 'bark, etc.' [1796] is supported by the presence of a related PD ***kuru** 'snore, snort, growl, etc.' [1852]. An argument in favor of Dravidian origin for OIA **phala** 'fruit' [9051] from PD ***paẓ-V** 'fruit' [4004] is the existence of PD ***paẓ** 'to ripen, mature' [4004] and PD ***paẓ** 'grow old; ancient, obsolete, old-fashioned' [3999]--but see below for further discussion of this word.

Even in such cases, however, it should be noted that the source of the OIA word need not have been Proto-Dravidian, as most of the OIA cases can be accounted for in terms of forms reconstructible only to PSD, or even PSD1 (the Tamil-Kannada branch of SD). There are a number of cases (apart from PSD ***nakar** just cited) in which words reconstructible only to PSD or PSD1 have been considered as (possible) sources of early OIA words, for example:
--OIA **ukha/ukhā** 'cooking-pot; hipbone' [1629]: PSD1 ***ukka** 'hip, waist' [564]
--OIA **gulpha/kulpha** 'ankle' [4216]: PSD1 ***koḷa(m)pu** 'hoof, ankle, wrist' [1829].

2.5. Dravidian borrowings in post-Rigvedic texts. Witzel (1999:39-42, 47) has discussed the occurrence of Dravidian borrowings in Vedic and post-Vedic texts, including the Atharvaveda (AV) and the Brahmanas, which correspond to the movement of Indo-Aryan speakers eastward from the Panjab into the Gangetic plain. Burrow (1973:386) has noted that words of Dravidian origin are more common in these later texts than in the Rigveda. Witzel mentions the following, among others (1999:41):[38] [numbers in brackets refer to CDIAL for OIA, to DEDR for Dravidian]
--**kuṇapa** 'corpse; putrid, smelling like a corpse' AV [3257]: PD ***kuẓ** 'rot, putrefy' [1822]
--**kurkura** 'dog' AV [3329]: PD ***kur(-kur)** 'bark/snore/groan' [1796]
--**cūḍa** 'protuberance on brick' ŚB, **coḍa** 'topknot' TS: PD ***cuṭṭ** 'tuft, topknot' [2655], PD ***cūṭ** 'wear on head' [2721]
--**eḍa(ka)** 'goat, sheep' JB: PD ***yāṭu** 'id.' [5152]
--**arka** 'the plant *Calotropis gigantea*' ŚB: PSD1 ***erukk-V** 'id.' [814]
--**bilva** 'wood-apple tree' AV: PD ***viḷa-va(l)** [9248]
--**nīra** 'water, juice' ŚB: PD ***nīr** 'water' [3690]; cf. OIA **nirguṇḍī** '*Vitex negundo*' below [

[37] As an Indus language word, ***kank/ko(r)k** would be another example of the variation between northern Indus **-an-** and southern Indus **-o-** noted in Witzel 1999:34-5.
[38] OIA **godhūma** 'wheat' is discussed by Witzel (1999:33-4). The word **nīra** 'water' is peculiar in that it is attested in NIA only in Lahnda (western Panjabi), Hindi, Gujarati, and Marathi; it seems to have been lost in the eastern NIA languages, in the area where it was first attested in OIA.

–mainā**la** 'fisherman' AV: PD *mīn-āḷ = *mīn 'fish' [4885] + *āḷ 'person' [399]

When we look at the modern distribution of these presumed borrowings in NIA and related languages, we find that some of them are abundantly attested in the Himalayan languages, including the Dardic and Nuristani groups. Thus for example, OIA **phala** 'fruit' (see above), apart from being widely attested in the NIA languages of the plains, is found in three Nuristani languages and seven Dardic languages, making its distributional profile similar to that of an inherited Indo-European word like OIA **trayaḥ** 'three' [5994]. Since the Nuristani languages are considered to form an independent subgroup of the Indo-Iranian family, distinct from the Indo-Aryan and Iranian branches (see Degener 2002), such a distribution could be considered indicative of origin outside of the subcontinent. Other cases of proposed OIA borrowings from Dravidian with significant attestation in Nuristani and/or Dardic languages are :

–**eḍa(ka)** 'goat, sheep' (above)
–**cūḍa** 'protuberance' (above)
–**kuṇḍá** 'pot, hollow' (see **nirguṇḍī** '*Vitex negundo*' below)
–**daṇḍá** m. `stick, club' [6128]: PD *taṇṭ-u 'stalk, stem, trunk' [3056], PSD *taṇṭ '(fore)arm' [3048]
–**píṇḍa** `lump, clod, piece' [8168]: PD **piṛ** 'to squeeze', cf. Tu. **piṇḍ** 'oilcake' [4183]
–**bala** 'strength' [9161]: PD *val 'strong, large, full-grown' [5276]
–**kāṇḍa** `single joint of a plant': PD *kaṇ 'joint in bamboo [1160]
–**mukha** 'mouth, face' [10158, v. also **mukhya** 10174]: PD *mūnk(k)u 'nose' [5024], cf. *mun 'front, in front' [5020(a)], *mū(n)t 'face/mouth/beak' [5031]
–**vāśī** 'knife, adze' [11588]: PD *vāc 'cut, chip, peel' [5340], *va(ṇ)ṭi 'sharp(ness), to sharpen' [5349], *mās/mas 'sharpen' [4628], *maṛ(-cc)-V 'axe' [4749], PSD *vāl 'sword'; cf. PD *vāy 'mouth; edge of blade' [5352]

Such distribution might be considered to negate the possibility of Dravidian as a source for these words (particularly in the last two cases, which also have cognates in Iranian languages). Yet it is perhaps possible that these OIA words are the remnants of contact with some group of Dravidian speakers north of the Hindukush, possibly an isolated group who wandered into that area, in a way similar to the movement of the Mitanni Aryans into Mesopotamia.[39] As Emeneau notes,

> [The Brahui speakers in Baluchistan] are basically sheepherders, forced by the exigencies of a bitter winter climate and of scant pasturage to practice transhumance...These migratory movements have taken them in all possible directions and have returned them each year to their traditional homes. But there has been inevitably an annual failure of some to return. They have settled...in the countries to which their migrations brought them... [including] contiguous parts of Iran and Afghanistan, and even in the USSR north of Afghanistan (Emeneau 1980a:315).

From the greater frequency of Dravidian loanwords in the post-Rigvedic period, Burrow has concluded that the Dravidian-speaking population of the Gangetic region must have been

[39] Note that except for the words cited as potential sources of OIA **ḍaṇḍa** 'stick', all of the PD words cited have ND cognates, and all but one of these (the suggested sources of OIA **cūḍa** 'protuberance') have cognates in Brahui.

substantial (Burrow 1973:386, cited in Witzel 1999:47). Witzel however points out that if this was the case, it is surprising that the rivers in this region all bear Munda and Tibeto-Burman names, and that no Dravidian river names are found (*ibid.*). A possibility to be considered is that at least some of these words may have entered the Gangetic region from further east or south, where the proportion of Dravidian speakers may have been greater. A number of OIA words which have been considered as probable borrowings from Dravidian show what can be called "outer Group" distribution (see discussion in 1.2 above), which includes the southwestern NIA languages Sindhi, Gujarati, Marathi-Konkani, along with the eastern languages Assamese, Bangla, Oriya, Bhojpuri, Maithili, etc.:[40] for example--

--**udumbara** `*Ficus glomerata* (tree/fruit)' TS/ ŚB [1942, attested in Pahari, several eastern languages, Hindi, Gujarati, and Marathi-Konkani]: PD ***uttu-mara** 'date tree' = ***uttu**(-tte) 'date' [620] + ***mar-a-m/n** 'tree' [4711(a)] or PSD ***paẓ**-V 'fruit' [4004]

--**āmrá** 'mango tree' ŚB [1268, att. in Pa.Pk.S.Ku.N.A.B.O.Bi.Mth.Bhoj.OAw.H.G.M.Ko.Si.] : PD ***mā-mara** 'mango tree' = ***mā-m** 'mango' [4782] + ***mar-a-m/-n** 'tree' [4711(a)]

--**paṇḍá** 'eunuch, weakling' lex., *páṇḍaga* AV [7717, att. in Pa. Pkt. B. O. H. M.]: PD ***peṇ(ṭ)** 'woman' [4395].[41]

--**nagara** 'town' JB [6924, att. in Dardic+O.H.G.M.Si.]: PSD ***nakar** 'house, abode, mansion, temple, palace, town, city' [3568][42]

Examples of this kind are somewhat easier to find for later periods, e.g.:[43]

--**argala** 'bolt of door' Pāṇ., Cf. *sărgaḍa*— 'barred' ŚBr. /***argaḍa** [629, att. in Pa.Pk.Ku.N.B. O.Bi.OAw.H.G.M.Ko.Si.]: PD ***aṭ-kaẓ** 'cross-bar' = ***aṭ** 'across, transverse, obstruction' [83] + ***kaẓ** 'pole, staff, bar' [1370]

--***āī** 'mother, aunt' [997, att. in N.A.B.O.G.M.]: PD ***āy** 'mother' [364][44]

--***uḍidda** `a pulse' [1693, att. in Pk.H.G.M.]: PD ***uẓ-untu** `black gram', *Vigna mungo* [690][45]

--**ēlā** 'cardamom' Suśr. [2522, att. in Pa.Pkt.O.M.Si.] : PSD ***ēl**-V [907]

--**ciñcā** 'the tree *Tamarindus indica*' Bhpr [4792, att. in Pa.Pkt.B.G.M.]: PD ***cin-tta** [2529]

--**nirguṇḍī** 'the shrub *Vitex negundo*' (a plant growing near water) Suśr. [7308, att. in Pa.O.G.M.]: PD ***nir-kuṇṭ** 'water-hole' = ***nīr** 'water' [3690] + ***kuṇṭ-a-m** 'cavity, pit' [1669], cf. PD ***kuẓ** 'excavate, hollow out' [1818]

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[40] Such words may have diffused into Hindi, as well as Pahari, but if found in Panjabi-Lahnda, or with extensive representation in Kafiri and/or Dardic languages, would be considered to belong to a different distributional set.

[41] The meaning 'effeminate/impotent man' is found only in PSD1.

[42] According to Witzel, "... may be a loan from the southern Indus language or one from the Malwa area" (1999:22). The first occurrence of this word in OIA is in the Jaiminiya Brāhmaṇa, a text which Witzel (1995a, 1989) has located between the lower Yamuna River and the Gulf of Cambay, possibly in the vicinity of Ujjain (M. Witzel p.c.). See discussion in 2.13 above, and next note.

[43] Given that many of the Dravidian sources in these cases cannot be etymologized (see 3rd paragraph of **2.13** above), we may be dealing in some of these cases with third sources, in this case in the region of southwestern IA or the Deccan. (Note that the core vocabulary of Marathi contains more words of unknown origin than of Dravidian origin: Southworth 2005b.)

[44] This word probably entered pre-Marathi from pre-Kannada, and spread from Marathi to other NIA languages. (In Marathi, āī is the main word for 'mother'.)

[45] This item is found in southwestern NIA (Gujarati and Marathi) and in Hindi. Black gram was associated with the southern Indus siteof Rojdi, where 18 seeds were found in strata A, C, and C/D (Weber 1991:98); it was also found in chalcolithic levels at the site of Navdatoli on the Narmada (Allchin 1979). The plant is indigenous to South Asia.

--panasa 'breadfruit tree, *Artocarpus integrifolia*' MBh. [7781, att. in Pa.Pk.B.O.H.M.Ko. Si.]: PD *pal-acV/pan-acV [3988]
--paṭṭana 'town' Kauṭ. [7705, att. in Pa.Pk.K.N.B.O.Bi.H.G.M.Si]: PSD *paṭṭ-V 'abode, cow-stall, sheepfold, hamlet, village, town' [3868]
--pāṭaka 'quarter of a town or village' [8031, att. in Pk.S.A.B.O.H.M.] PSD *pāṭ-V 'hut, settlement, village, street of herdsmen; place-name suffix' [4064]
--*pilla 'small, child, young of animal' [8214, att. in Pa.Pk. S.kcch.B.O.Bhoj. Aw.lakh. G.M.Si.]: PD *piḷḷ 'young child/animal' [4198]
--pravāḍa 'coral' BHSk. [8794, att. in Pa.Pk.S.N.A.MB.B.O.OG.G.M.Si.]: PSD *pav-aẓ 'coral' [3998]
--murala `a fresh-water fish' Suśr. [10213, att. in S.O.H.M.Si.]: PSD1 *mural [4794]
--vījana n. `fanning' Kāv., `fan' Bhpr., vyajana `fan' Mn. [12043, att. in Pa.Pk.S.B.Mth.G. M.Si.]: PD *vī(n)c 'swing, brandish, throw, make fanning motion; fan, net, swinging/fanning motion' [5450]

2.6. A Dravidian substratum in western India

Figure 3 indicates that Dravidian languages were earlier spoken in the west of India, approximately in the area of the current Indian states of Maharashtra and Gujarat, and the Pakistani state of Sindh. The evidence for this Dravidian substratum is clearest in the case of Maharashtra, and includes:
(1) a shift in the system of verbal negation from the older Indo-Aryan system which used a free particle na (Speijer 1886:315-20) to a system of negative auxiliary verbs used for different kinds of negation (e.g. karu *nakā* 'don't do', karu *naye* 'shouldn't do', karit *nāhi* 'does not', karit *naste* 'does not go' [habitually], karit *navhto* 'was not doing', karu *nalage* 'ought not do')--which is parallel, and identical in many details, to the system found in several Dravidian languages, especially Kannada;[46]
(2) an erosion of the inherited Indo-Aryan syntactic ergative construction in the direction of the Dravidian pattern of subject agreement in all tenses;
(3) use of relative verbal participles which is more like Dravidian than other Indo-Aryan languages, and which is not inherited from earlier Indo-Aryan (see Nadkarni 1975);
(4) the innovation of a distinction between inclusive and exclusive first-person plural pronouns, found generally in Dravidian but not elsewhere in Indo-Aryan except in Marathi, Gujarati, and some Rajasthani dialects (Masica 1991:251, Southworth 1971);
(5) words of Dravidian origin in Marathi basic vocabulary, such as ḍoke 'head', lek 'boy, son', leki 'daughter', ḍāvā 'left' -kaḍe 'toward', as in gharā-kaḍe 'toward the house, homeward';[47]
(6) a shift of stress accent to the initial syllable of words (as in Dravidian, and as opposed to its position in northern Indo-Aryan; see Southworth 2005a: 3.31, 5.22C).

2.7. Dravidian place names in western India.

Many village names with Dravidian suffixes are found in Maharashtra and Gujarat (Southworth 2005:chapter 9).[48] In addition, it has been claimed that several river names in eastern

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[46] A similar trend is found in a number of NIA languages (see Masica 1991:289-91, 389-94), but in most languages is limited to a single form (cf. Hindi **nahĩ~** 'not, is/are not'); Masica lists 'Gujarati, Marathi, Oriya, Bhojpuri, etc.' [all "Outer group" languages] as possessing 'sets of *Negative* Auxiliaries' (1991:289).
[47] PD ***kaṭ** 'to pass', with a derived noun PSD ***kaṭ-a** 'end, direction, vicinity'-- cf. Telugu **i-kkaḍa** 'here, hither, this place', **a-kkaḍa** 'there, thither, that place' (DEDR1109)

Maharashtra are of Dravidian origin (Namboothiry 1987, cited in Witzel 1999:64). The Marathi name for this eastern region, **Varhāḍ**, is plausibly derived from a Dravidian ***vaṭa-kāṭu** 'banyan forest'[49] (or perhaps 'northern forest'; see DEDR1438 PSD ***kāṭu** 'forest, jungle'; DEDR5218 PSD ***vaṭa** 'north'). The words of Dravidian origin found in Marathi core vocabulary are mostly of South Dravidian origin, and more specifically from SD1, the branch of South Dravidian which includes Tamil and Kannada--though a few words come from SD2, the branch dominated by Telugu, spoken to the southeast of Maharashtra (v. Southworth 2005b). Thus it seems reasonable to assume that the variety of Dravidian which occupied this region was an extension of SD1, probably most closely resembling Kannada, the language spoken immediately to the south of Maharashtra.

2.8. Dravidian kinship systems in southern Indo-Aryan languages.

In addition to this linguistic evidence, Trautmann (1981) has shown that features of "Dravidian" kinship systems (particularly cross-cousin marriage and terminological categories compatible with it) are found in the southern part of the present Indo-Aryan-speaking zone. The ancient South Asian historical tradition lists both Maharashtra and Gujarat among the "Dravidian countries". The medieval Yadava (OIA **yādava**) kingdoms of Maharashtra are linked to the traditions of the puranic Yadavas, who were often considered to be Dravidian or Dravidian-influenced (see Southworth 2005a:6.3, Thapar 1975). The historian S. B. Joshi claims that Maharashtra was originally a Dravidian-speaking area, and that even as late as the 12th century CE the Yadavas of Hoysal identified themselves as speakers of Kannada while the Yadavas of Devagiri officially supported Marathi (Joshi 1951, 1952, quoted in Deshpande 1979:102).

2.9. The archaeological evidence for Dravidian speakers in the northern Deccan.

Bridget and Raymond Allchin, speaking of the chalcolithic Jorve culture which flourished in Maharashtra between the mid-second millennium and the early first millennium BCE[50], make the following statement:

> We may...postulate that the original population of agricultural settlers was Dravidian speaking, and that the changes associated with the Jorve period coincided with the arrival of immigrants from the north, speaking an Indo-Aryan language. This language must have been the ancestor of modern Marathi (1982:352).

The sites of the Jorve culture are located on the upper reaches of the Godavari river system. The earlier culture phase at these sites, known as the Malva Culture, was characterized by "pre-Chalcolithic Neolithic elements" which can be linked to the Southern Neolithic Archaeological Complex (see above). The Jorve sites are located in the part of the Maharashtrian plateau known as the "Desh", in the districts of Pune, Aurangabad, Ahmadnagar, and Solapur. This is the area where, according to the locations of place names, one would expect to find the earliest Marathi speakers. It is also the area where the earliest

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[48] It is not clear whether the Sindhi suffix **-wari/-wāri** is derived from the Dravidian **-paḷḷi**, as is the case with Marathi **-v(a)li/-oli** and the Gujarati **-oli**, as the expected result of a Dravidian **-ḷḷ-** would be MIA **-ll-** → Sindhi **-l-**.

[49] The OIA **vaṭa** 'banyan' , attested in the Mahabharata, is of unknown origin; it may be related to PSD ***vaṭa** 'rope'--referring to the rope-like aerial roots of the banyan tree (v. Mayrhofer 1953 *s.v.*)

[50] S. B. Deo's dating: 1400-700 BCE; V. N. Misra: Early Jorve 1500-1200, Late Jorve 1200-900 BCE; Allchins: 1500-1050 BCE.

dynasty of the region, the Satavahanas, originated in the first century BCE. Of course, the connection between Marathi and the Jorve culture is not proven; though suggested by reputable archaeologists, it can only be considered a working hypothesis.

2.10. Creating a narrative for Dravidian prehistory.

The Dravidian languages are unlike language families such as Malayo-Polynesian, which developed, at least partially, as distinct and widely separated speech communities on isolated islands in the Pacific. As noted in 2.1 above, CD and SD were still in contact with each other in PD Phase 3, and may even have been in intermittent contact more recently. ND2 (Kudux-Malto) was apparently in contact with SD-CD in PD Phase 2. Thus our reconstructions of the phases of PD are subject to a general weakness of such reconstructions: elements (words, sound distinctions, grammatical rules) which are imputed to one stage may have in reality belonged to a preceding or a following stage, because such elements may diffuse between two related forms of speech even after the latter have become differentiated in other respects.[51] In addition, consecutive stages are not necessarily chronologically discrete, and thus the processes of change which appear to be separate, when viewed as belonging to distinct phases, may actually be continuous.

On the other hand, the development of the Dravidian vocabulary of food production, as sketched in 2.2 above, conforms closely to the general development of food production in South Asia as it is known from archaeology. More specifically, the *sequence* in which the names of crop plants appear in PD Phases 3-5 matches closely with the order of appearance of the corresponding crops in the archaeological record of the Southern Neolithic Archaeological Complex (2.3 above; see also Southworth 2005).[52] The validity of the phases as described here is also supported by other aspects of reconstructed vocabulary: for example, while PD Phase 1 has words for 'house' or 'dwelling', Phase 2 adds words for 'beam' and 'upper story', and Phase 3 adds words for 'stair/ladder', 'door', and 'screen'. While Phase 1 appears to describe social relations mainly in terms of kinship, Phase 2 adds words for 'king/lord', 'servant', and 'beggar', whereas words related to caste first appear in Phase 3.[53] Thus although the assignment of particular features to particular phases may be deceptive, the general *sequence* of development can be seen as reflecting the situation on the ground with reasonable accuracy.

The speakers of the four major South Dravidian languages, who occupy the plains and river valleys of peninsular India, are the bearers of an agricultural tradition which began with the Southern Neolithic Archaeological Complex. Thus, whether or not the first farmers of South India were Dravidian speakers, the expansion of the area of the SNAC took place almost entirely within the region where the four literary Dravidian languages are now spoken, and thus the subsequent history of that archaeological culture can hardly be separated from the history of Dravidian languages.

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[51] For further details see Southworth 2005a:18-19, 2006:124-6; Pulgram 1958:146-7.

[52] The archaeobotany of the Southern Neolithic has been discussed in Fuller 2006, Fuller 2003, and Fuller, Korisettar, & Venkatasubbiah 2001.

[53] Details can be found in Southworth 2005a:257 ff. (Chapter 8, Appendix A). **Note**: PD Phases 1-3 were treated as a single phase in this work, but Phase 1 words can be identified by the presence of a Brahui (Br) cognate in the third column, while Phase 2 words have either a Malto (Mt) or Kudux (Ku) cognate; Phase 3 words are those with English glosses in plain (not bold) type in Column 1.

The phases of development of Proto-Dravidian can be defined in terms of two types of data presented above: (1) the innovations shared by the various branches, as described in 2.1 above, (2) the distribution of agricultural vocabulary, described in 2.2. These two bodies of data, taken together, suggest the following sequence:[54]

T_0 - the original Proto-Dravidian speech community without significant regional variation;[55]

T_1 - a division between a northern and a southern dialect arose as a result of innovations in the former (see 2.1), implying some sort of cultural division within the speech community; this community's food production involved primarily hunting/gathering and grazing of (domestic?) animals;

T_2 - the northern and southern dialects shared the development of new agricultural vocabulary, indicating that this community had reached a pre-agricultural stage, with some words for food plants and agricultural processes such as winnowing, suggesting that wild cereals may have been gathered and processed for food; Brahui, which does not share this vocabulary, was by that time a separate speech community;[56]

T_3 - further development in the agricultural vocabulary of the southern dialect shows that it is now the language of a clearly agricultural community, with words for a number of specific crops including cereals and pulses, and a variety of agricultural operations; Brahui and ND2 (Kudux-Malto), which do not share these latest developments, are separate;

T_4 - continued agricultural development, along with phonological and morphological innovations, in one part of the southern community leads to a split into SD (the innovating community) and CD.

This process is diagrammed schematically in Figure 4. These maps are not intended as conclusions, but rather as suggestions as to how one might fill in the gaps between what we assume about the earliest location of Dravidian in the subcontinent, and the current distribution of Dravidian languages as depicted in Figure 3.

Comments on Figure 4:

-T_0 is not shown in Figure 4. A location somewhere in the Indus region is inferred from the various suggested (though as yet unproven) connections with languages outside of the subcontinent, as well as the presence of PD Phase 1 words in the Nuristani and Dardic languages (v. 2.5 and note 38 above). It is possible that small groups of PD speakers passed through the Indus Valley, perhaps as herders.[57] It seems unlikely that Dravidian speakers were the bearers of the Indus Valley Civilization, since no Dravidian words have been identified in the early books of the Rigveda (Witzel 1999:17-24), nor have any been identified in modern Panjabi.

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[54] **T** = time. Though these phases can be regarded as occurring in the given sequence, there may have been chronological overlapping of some portions of some phases: for example, the "southern" dialect of the first three phases (which divides into SD and CD in Phase 4) may well have undergone considerable internal differentiation during the earlier stages.

[55] Even small, homogeneous, non-hierarchical groups exhibit some language variation, for example based on gender, age, clan membership, or the like (see Southworth 2005a:25-7).

[56] Winnowing may possibly have already been present at the preceding stage; cf. Br. **dranzing, drāzing** 'to throw up in the air, winnow' (DEDR3195).

[57] I have noted elsewhere (Southworth 2005:73) the possible origin of OIA Yādava from a PD ***yāṭu-van** 'sheep-man', i.e. 'shepherd', though Michael Witzel has expressed doubt about this etymological suggestion (p.c.).

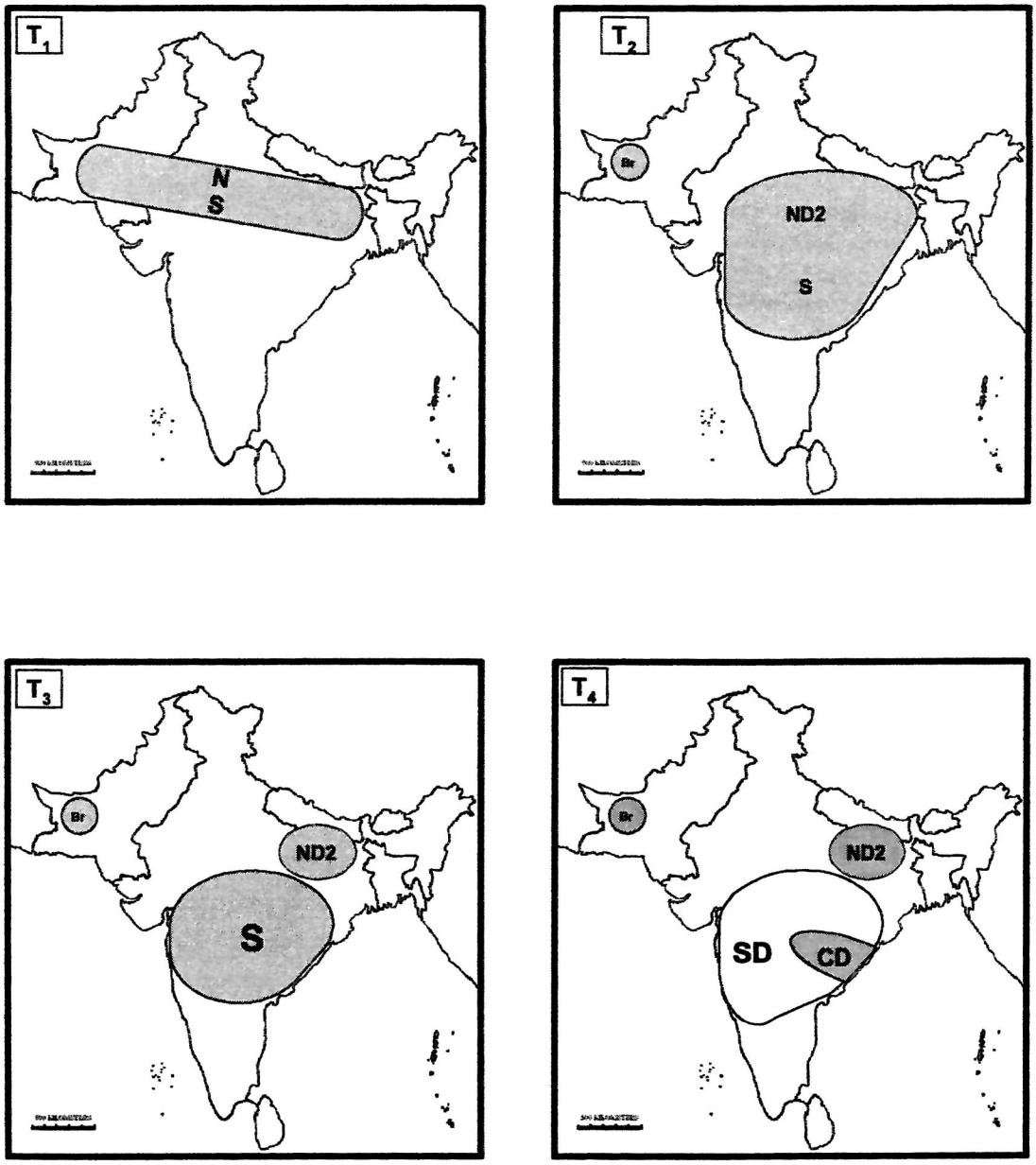

FIGURE 4. Suggested Phases of Proto-Dravidian
(see text)

- T_1: The area indicated here includes the approximate current locations of all the ND languages. PD Phase 1 might have been located in any part of this area.
- T_2: At this stage, Brahui is isolated, though ND2 (Kudux-Malto) is still in contact with the southern dialect. It is possible that the large differences in vocabulary between Brahui and ND2 (see 2.1) are the result of the loss of intermediate varieties from an earlier ND dialect continuum which stretched across the subcontinent, as depicted at T_1. As Fuller has noted, the reconstructible tree names in Phase 2 (and possibly even in Phase 1) indicate a clear ecological awareness of Peninsular Dry Deciduous trees, placing this speech community at the Aravallis or eastward and south of the Vindhyas (Fuller 2005:187).
- T_3: This phase is defined by the agricultural vocabulary shared between SD and CD, which (as noted in 2.2 above) clearly establishes the presence of farming at this period, and suggests a link with Phase 2 of the SNAC (2300-1800 BCE).
- T_4: This phase is defined by the shared phonological and grammatical changes which distinguish the South Dravidian languages as a whole from the languages of the other two branches; these changes are also accompanied by new vocabulary in agriculture and many other semantic areas (Southworth 2005: Ch. 8, App. B).

After these changes, the stage is set for the great expansion in the sites of the Southern Neolithic Archaeological Complex. It can be presumed that the South Dravidian languages expanded in all directions from the SNAC core area (see Figure 3). This expansion primarily involved (what were to become) the four literary languages: Tamil, Malayalam, Kannada, and Telugu. The expansion of PSD1 probably included a northward movement in the western Deccan into Maharashtra and Gujarat, and possibly Sindh (see 2.6-2.9 above), which may have been the source of most of the Dravidian borrowings in OIA (see 2.4-2.5), though it is possible that there already were speakers of some form of Dravidian in those areas. The northward expansion of SD2 apparently caused the division of Central Dravidian into two separate groups.

The agricultural innovations associated with the SNAC were probably of major importance in the linguistic development of Dravidian, as well as in the socio-economic development of the early Dravidian-speaking communities. The development of full-time farming was perhaps the primary factor in the split of PSD from the other branches, and in the relegation of the various ND and CD languages to mountainous, rocky, or (formerly) heavily forested areas where large-scale agriculture is difficult or impossible. The occurrence of changes within SD which divide groups of "tribal" SD languages from the major languages (see Krishnamurti 2003:498) may be later instances of the same phenomenon, though in both cases other areas of technology may have been an additional factor.

It has been suggested that the speech community corresponding to PD Phase 3 probably fits somewhere in Phase 2 of the SNAC (2300-1800 BCE), because of the close relationships in agriculture, particularly the names of crop plants (2.2-2.3; Southworth 2005:135-8).[58] Extrapolating backwards from this stage, PD Phase 2 might be reasonably placed in the mid-

[58] See Fuller, Boivin, & Korisettar [in press] for the dating of the Southern Neolithic. Boivin et al. [in press] suggest that the original domestication of the key crops of the Southern Neolithic may have taken place in an area "north of the Kurnool district (i.e. north of the Krishna River in western Andhra Pradesh". This is to the north and slightly eastward of the core area of the SNAC shown in Figure 3 above. This domestication may have occurred sometime in late Phase 2-early Phase 3 of Proto-Dravidian.

third millennium BCE, Phase 1 in the early part of the same millennium, and Phase 0 (the undifferentiated Proto-Dravidian) perhaps in the late fourth millennium BCE. Going forward in time, it is likely that PSD, and possibly its offspring PSD1 and PSD2, belong somewhere in Phase 3 (1800-1200 BCE) of the SNAC.[59]

3. A first reconstruction of the Indus language

3.1. Turner's *Comparative Dictionary of the Indo-Aryan Languages* contains somewhere in the vicinity of 1200 entries containing reconstructed words, based on words found in the NIA languages which are not derivable from OIA. Only a small percentage of these words have been shown convincingly to be connected with Dravidian, Munda, or other known language families. Thus it is commonly assumed that these words are derived from one or more languages that were spoken earlier in the subcontinent (see Witzel 1999:50).

About one-third of these words have wide distribution within NIA, including all the major areas: NW, SW, Center, and East, but mostly without extensive representation in the Himalayan languages, apart from the Pahari languages. While any one of these words might have come from any part of the NIA area, or even from outside it (e.g. Iranian, Chinese), for words with this widespread distribution the *most likely* explanation (that which requires the fewest additional assumptions) would be that they came from the Indus Valley--since (it is assumed that) the ancestors of all the NIA languages passed through the Indus valley at some time in the past, and from there moved eastward--either from Panjab into northern India, or from Sindh into Central India, the Deccan, and the east (see 1.2 above). Thus we may ascribe words with the requisite distribution to the Indus language(s) *unless there is evidence to the contrary.* Making this assumption leads to the recognition that, if these words can be considered to be part of a prehistoric language of the Indus Valley, that language differs in some subtle and not-so-subtle ways from the other known South Asian languages, as shown in the following paragraphs.

3.2. Phonemic inventory of Indus words (* denotes rare items)

3.21. Vowels:

a	i	u	e*			
ā	ī	ū	ē	ō	ai	au

3.22. Initial consonants:

k	c	ṭ	t	p	r	l	v	ś*	h
kh	ch	ṭh	th	ph					
g	j*	ḍ	d	b					
gh	jh	ḍh	dh	bh					
			n*	m					

[59] Krishnamurti (2003:501-2), on the basis of inferences made from Sanskrit texts of the fourth and seventh centuries BCE, estimates that the division of Proto-South Dravidian into PSD1 and PSD2 may have been complete by about the eleventh century BCE. Figure 2 in Boivin et al. shows that by 1500 BCE, the Southern Neolithic had expanded southward to about the present-day southern border of Karnataka. These datings then appear to be largely compatible with one another.

Initial clusters: tr-* dr-*

3.23. Intervocalic consonants and clusters:

-k-	-	-ṭ-	-	-
-kh-	-	-	-	-
-g-	-	-ḍ-	-	-
-	-	-ḍh-	-	-
-kk-	-cc-	-ṭṭ-	-tt-	-pp-
-kkh-	-cch-	-ṭṭh-	-tth-	-pph-
-gg-	-jj-	-ḍḍ-	-dd-	-bb-
-	-jjh-	-ḍḍh-	-ddh-	-bbh-
N/A	N/A	-ṇ-	-n(n)-	-m(m)--mh-
-nk-	-nc-	-nṭ-	-	-mp-
-nkh-	-	-nṭh-	-nth-	-mph-
-ng-	-nj-	-nḍ-	-nd-	-mb-
-	-	-nḍh-	-	-
-y-	-r-	-l(l)- -lh-	-v(v)-	-s(s)- -h-

-t(t)r-, -rg-, -rt-, -rd-, -rp-, -sṭ(h)-

Some examples: 1014 ***ākkira** 'dear, costly', 2540 ***ōccha** 'small, thin, mean', 2544 ***ōṭṭā/ōttā/ōḍḍā** 'shelter, screen' 2613 ***kacca** 'raw, unripe', 3790 ***khaḍḍa** 'hole, pit', 3983 ***gaḍḍa** 'sheep', 4053 ***garda** 'seat', 4427 ***ghabbhara/ghabbhaḍa** 'confused', 4676 *cam(m)akka 'sudden movement', 4968/4970 ***chaṭṭ/chaṇṭ** 'scatter', 5085 ***jañjāla** 'worry, affairs', 5321 ***jhagaḍ/jhaggaḍ/jhaggaṭṭ** 'quarrel', 5440 ***ṭaṭṭu/taṭṭu** 'pony', 5489 ***ṭhagg/ṭhakk/ṭhaṅg** 'cheat', 5517 ***ḍakk/ḍaṅk(h)/daṅk** 'bite', 5580 ***ḍhappa/ḍhaba/ḍhabba/ḍhippa/ḍhibba/ḍhēppa/ḍhēmpa/ḍhēba/ḍhēbba/ḍhēmba/ḍhubba/ḍhōmpa** 'lump', 5634 ***taḍapphaḍ** 'agitate', 6024 ***t(r)iḍḍa** 'locust, grasshopper', 6091 ***thapp/thabb/ thipp** 'slap, pat', 6173 ***dabb/ḍabb/dapph** 'press', 6618 ***draṭ(ṭ)/draṇṭ** 'to press', 6736 ***dhammakka** 'threat', 6935 ***naṭṭa/naṭṭha/naḍḍha/naṇḍha/niḍḍha** 'defective', 7968 ***pallaṭṭ** 'turn, overturn', 8014 ***pasṭāna** 'Afghan', 9038 ***phaṭ(ṭ)** 'sudden movement', 9117 ***bakk** 'chatter', 9365 ***bhaṭ(ṭ)** 'sudden movement or noise', 9724 ***maṭṭara/maṭṭha** 'pea', 10558 ***ragg** 'rub', 10877 ***lakk(h)a/laṅka/laṅga** 'defective', 10991 ***lasṭi** ' stick ', 11347 ***varta** 'circular object', 12270 ***śaṭṭa** 'defective', 13973 ***hamph/happh** 'pant'.

The Indus phonemic inventory is similar to that of MIA, which is not surprising as all these words have been transmitted through the MIA 'filter'. On the other hand, the high frequency of geminate consonants is somewhat unexpected. Witzel (1999:48-50), following Kuiper (1991), has discussed the question of geminates in South Asian languages, noting their occurrence in words in Vedic and later Sanskrit which were borrowed from local languages,[60] and in other

[60] Since geminate consonants were of limited occurrence in Vedic, these words were often disguised or 'Sanskritized' in the Vedic texts: thus **pippala 'fig' was changed to piṣpala, guggulu** to **gulgulu**, etc. Though certain geminates, especially in word formation and flexion (*-tt-, -dd-, -nn*etc.), are allowed and common, they hardly ever appear in the stem of a word (Sandhi cases such as *anna, sanna* etc. of course excepted). Until the late

ancient languages of the subcontinent, including several pre-Indo-Aryan languages of Nepal, as well as Nihali, Dravidian, and the pre-Dravidian language(s) of the Nilgiris. It is possible, of course, that some of these geminate consonants are derived from earlier consonant clusters.

3.3. Frequency of initial consonants

k-14	kh-9	g-20	gh-5	
c-22	ch-13	j-4	jh-22	
ṭ-17	ṭh-12	ḍ-17	ḍh-11	
t-8	th-7	d-6	dh-13	n-5
p-9	ph-8	b-6	bh-10	m-8
r-13	l-24	v-3	ś-1	h-9

Though the overall number of words is too small to permit any far-reaching conclusions to be drawn from these figures, it is probably significant that the retroflex stops (ṭ ṭh ḍ ḍh) account for 19.26% of all initial consonants. (Only the palatal series is more frequent, with 20.61%.) The fact that initial retroflexes are more frequent than initial dentals (13.18%) is also striking, given the very different ratios found in Indo-Aryan and Dravidian, as shown below:

PERCENTAGE OF INITIAL CONSONANTS:	RETROFLEX	DENTAL
Sanskrit (26 vs. 142 of 1067 pp. in Monier-Williams 1899)	0.24	13.31
Comparative Indo-Aryan (193 vs. 2005 of 11,616 entries in CDIAL)	0.17	17.26
Hindi (32 vs. 153 of 932 pp. in McGregor 1993)	3.43	16.42
Marathi (26 vs. 117 of 797 pp. in Molesworth 1975)	3.26	14.68
Comparative Dravidian (57 vs. 806 of 4483 entries in DEDR)	1.27	17.98
Indus (57 vs. 39 of 296)	19.26	13.18

It may also be worth noting that the retroflex stops show the most complete set of intervocalic combinations of all the consonant series (3.23). Despite the small sample size, these facts may suggest the probability that both Indo-Aryan and Dravidian derived their retroflex consonants from the Indus language(s).

3.4. Word forms and morphology

The formula (C)VC(C) describes the basic root-syllable type, to which another V (most commonly i or a) can be added to form nominal stems, as in: 2540 *ōccha 'small, thin, mean', 2613 *kacca 'raw', 5352 *jhal(l)- 'flash'. To these stems are often added suffixes which Turner calls 'extensions', of the forms -kk-, -ṭ(ṭ)-, -ḍ-, -pp-, -r-, -l(l)-, -ē(l)l-, -ōl(l)-, -s(s)-, as in: 5327 *jhaṭ- 'sudden movement' > M. jhaḍjhaḍ 'in a flash'; *jhaṭ-akk- > H. jhaṛāk 'swiftness'; *jhaṭ-app- > H. jhaṛapnā 'to fight'. In some entries all forms have the same extensions, as in: 3765 *khacca(-)ra 'mule', 5321 *jhagga(-)ḍa 'quarrel'. Some of these extended forms may conceal compounds, e.g.: S. jhakora 'downpour of rain' < *jhak-ōl < 5316 *jhakk 'sudden movement or blast'.

Words or stems of more than two syllables include compounds (some of which are IA-Indus hybrids), reduplications and echo-formations, e.g.: 2614 *kacca-pura 'wheaten cake', 5493 *thaṭṭha-kāra 'brass worker', 5521 *ḍ(h)ak-kāra 'belch', 10903 *langa-paṭṭa 'loincloth', 4012

Brāhmaṇa texts, other geminates, especially *bb, dd, gg, jj, mm, ll,* but also *kk, pp,* etc., are studiously avoided, except in the few loan words mentioned above...(*op. cit.*, 48-9).

*gana-gana 'murmur', 3974 *gaḍa-baḍa 'confused'. Other longer words require further analysis, e.g. the following might be compounds: 2633 *kaṭacchu 'ladle'; 2648 *kaṭṭōra 'cup' (cf. 2614 *kacca-pura above). There are some possible cases of prefixation, but they are as yet unclear and are in any case not very common, e.g.: 5453 *ṭa(-)hall 'walk up and down' (cf. 14017 *hall 'movement', 14018 *hall 'move, shake'); 7619 *pakkaḍ/paggaḍ 'seize', 8018 *pahunca- 'forearm, wrist', 8464 *pragaḍḍa 'ditch' (cf. 3981 *gaḍḍa 'hole, pit'), 10984 *lavaṇḍa 'servant, boy' (see 8. *laṇḍa in Appendix A).

3.5. Phonological and semantic variation within entries

A number of entries show significant phonological variation, as in the following case: 5423 *takka- 'hill'. 2. *ṭaṅga- [4]. 3. *ṭikka- [2]. 4. *ṭiṅga-. 5. *ṭēkka-. 6. *ṭēṅga-. 7. *ṭuṅka-. 8. *ṭuṅga- [1]. 9. *ḍakka- [3]. 10. *ḍagga- [1]. 11. *ḍaṅga- [3]. 12. *ḍuṅga-. 13. *ḍōṅga- [2]. 14. tuṅga-. 15. *thuṅga-. 16. *daṅga-. (These variant reconstructions are all required in order to account for all the related words in the NIA languages.) See other examples at the end of 3.23 and in Appendix A. All the types of variations illustrated here, including vowel shifts, voiceless vs. voiced consonants, aspirated vs. unaspirated stops, retroflex vs. dental consonants, single vs. geminated consonant vs. nasal + stop, are found frequently in a number of entries.

Semantic variation is also found in these complex entries; the meanings found in CDIAL5423 include 'hill, peak, crag, mountain, precipice, hillock, high land, anthill, low hill, rock, rocky country, sandbank, heap, pile, very high, lofty, important', among others. Meaning variation is especially prominent in the "defective" entries (see Appendix A).

These variations are significant in terms of language history in that they provide a record of a long sequence of interlinked changes, implying both a long period of time and (possibly) a long chain of events involving different languages and dialects colliding with each other.

3.6. Vocabulary content

The content of the words collected so far is on the whole rather down to earth, reflecting the vocabulary of a people who are close to nature, are accustomed to dealing daily with animals and food production as well as basic technology, and who often express themselves bluntly. Words for the natural environment include plants (names of specific plants as well as plant parts), common domestic animals (cattle, mule, sheep, goat, pony, ox), and many words for hills and mountains.

Basic technology includes terms for land measure, sword, fort, brass, drum, box (5528 *ḍabba- > H. ḍabba), basket, frame-work, knife/scraper, cloth and items of dress (loincloth, headdress), ladle, cup, stick/cane. The list contains a large number of verbs for basic activities, including many words for bodily movements: pull/draw, cough, dig/bury, crackle, lick/taste, press, scatter/ sift, seize, press, fall, shake, close, spread, flash, drip, hang up, tighten, bend, stretch, bite, slap, push, throb, fight. A number of entries have the general gloss 'sudden (or 'rapid') movement'. Some popular metaphors appear: e.g. a verb meaning 'jingle/sizzle' is extended to mean 'walk with airs'; the verb 'crackle' is extended to mean 'be argumentative'.

More than a score of entries have the general gloss 'defective'; most are large entries with numerous variants, with a range of meanings like 'bad, useless, trash, ugly, impure, stupid, too

old, too young, weak, incompetent, rude, lascivious, bald, tailless, wifeless, crippled,' etc. Some frankly abusive words are included, and many words apply to perceived physical and mental defects of both humans and animals. Human and animal sex organs and excretory functions are also frequently mentioned. See Appendix A for a fuller example.

3.7. Sindhi: a reliable source?

Membership in the Indus vocabulary list requires cognates in Sindhi, Panjabi/Lahnda, Hindi, and at least one eastern language, which would assure that the word is firmly established both in the Indus Valley and in the rest of Indo-Aryan territory. (Other distributions may be considered later on, after some major traits of the Indus language(s) have been established; see 3.10 below.) Given what the archaeologists tell us about Sindh--that it was severely depopulated at the end of the second millennium BCE, and again in the late first millennium--the question may be raised whether modern Sindhi can be considered a reliable guide to the earlier situation. A number of features of Sindhi allow us to answer that question in the affirmative.

Like the other modern Indo-Aryan languages, Sindhi shares features with its neighbors, and also is independent from them in other features. For example, in Sindhi OIA and MIA -l- > -r- (as in **pharu** 'fruit' < OIA & MIA **phala**), a change not shared by any immediate neighbors. Though generally closer to Hindi in its verb morphology, Sindhi has retained a vestige of the past in -l- which is a characteristic of the 'outer group' languages (Southworth 2005, see 1.2 above). The voiced implosive stops ɠ ʃ ɗ ɓ are a unique feature of Sindhi.

Sindhi shared the widespread change in which OIA consonant clusters, which mostly became geminated consonants in the MIA stage, were later simplified to single consonants, as in 2854 OIA **kart-ati** 'cuts' > MIA **katt-ai/kaṭṭ-ai** > S. **kaṭ-anu** 'to cut', cf. H. **kāṭ-nā**. However, significantly for its historical reliability, Sindhi retains the length of the OIA vowel preceding the OIA consonant cluster, as in the example just cited and in cases like the following:

(1) 4701 OIA **cárman** 'hide, skin': MIA **camma**: S. **camu**, in contrast to 4767 OIA **cārmá** 'leathern': S. **cām-elo**

(2) 2877 **karpāsa** m. 'cotton': MIA **kappāsa**: S. **kap-āha** (H. **kapās**)--as opposed to 3073 **kārpāsika** 'made of cotton': MIA **kappāsiya**: S. **kāp-āhī** (H. **kapāsī**)

(3) 10881 **lakṣa** '100,000': MIA **lakkha**: S. **lakhu** (H. **lākh**), in contrast to 11002 **lākṣā** 'lac': MIA **lakkha/lākha**: S. **lākha** (H. **lākh**).

This distinction, which was lost in most of MIA, was retained in Sindhi in contrast with most of the other NIA languages, which show either a long or short vowel depending on the position in the word, regardless of the length of the OIA vowel: e.g. Hindi has short **-a-** in both **kapās** 'cotton' and **kapāsī** 'of cotton', but long **-ā-** in both **lākh** '100,000' and **lākh** 'lac'. Sindhi has also retained some initial consonant clusters (Masica 1991:125) and some final long vowels, which have been lost in most of the other major NIA languages (*op. cit.* 123).

3.8. Basic vocabulary

The Indus language list contains a number of items which are the sources of basic vocabulary words (Swadesh 200-word list) in NIA languages, such as:

(1) 8376 ***pēṭṭa** 'belly': S. **peṭu**, AB. **peṭ**, O. **peṭa**, H. **peṭ(ā)**, G. **peṭ**, M. **poṭ**;

(2) 9289 ***bura** 'defective': S. **buro** 'noseless, bad', P. H. **burā**, G. **būrũ**, M. **burā**;

(3) 997 *āī 'mother, aunt': S. B. O. G. M. āī;
(4) 7619 *pakkaḍ— 'seize': S.kcch. pakaṛṇū, P. p(h)akaṛṇā, A. pākariba, B. pākaṛā, O. pakaṛāibā, H. pakaṛnā, G. pakaṛvũ, M. pakaḍṇē.
Given that basic vocabulary is very slow to change--the majority of the basic vocabulary in NIA languages is probably still of Indo-European origin--such words suggest that the Indus language(s) had significant early contact with Indo-Aryan languages.

3.9. Other sources of Indus vocabulary

If the argument used to establish the Indus list is valid for NIA, it should be equally valid for words of unknown origin in MIA and OIA which show the requisite distribution. This would open the doors to including a large number of words which have been the subject of etymological speculation for many decades, including words from the Rigveda to classical and late Sanskrit. Some examples:
(1) 7563 nīla ' dark blue, dark green, black ': S. *nīro*, P. *nīlā, līlā*; B. *nila*, Or. *niḷa*; Mth. *nīl*, H. *nīlā*, etc.
(2) 2360 ulūkhala 'mortar': S. *ukhiṛī*, P. *ukkhal*, B. *ukhli*, H. *ūkhal*, etc.
(3) 268 āmrá m. 'mango tree/fruit': S. *āmo*, P. *amb*, BH. *āb, ām*, etc.
Like this last item, many of the words in question are the names of plants which have long existed in the Indus Valley region, and thus could logically be expected to have names in the local language which would have been adopted by newcomers to the region. This includes, for example, most of the agricultural words in Masica's "language X" (Masica 1979), which show wide distribution in NIA: for example, the pipal tree, which is depicted on Indus seals (8205 pippala RV, pippali AV); sesame, found at Harappa (5827 tilá AV); the grape (6628 drākṣā), of which seeds were found in Kashmir dateable to the late 3d millennium BCE; the date (3828 kharjūra), the chickpea (4579 caṇa), and many others.

3.10. Other distributions

If the vocabulary list established by the criteria discussed above is considered a valid representation of a language or languages spoken in the Indus Valley, then it may be possible to consider adding items with slightly differing distributions in the NIA languages. The study of such entries may provide information on variations between the north and south Indus languages (see Witzel 1999:30 ff.). The following possibilities suggest themselves:
(A) Entries with Sindhi cognates but without Panjabi (Turner's P. or L.), if also found in Hindi and the eastern languages, might be considered to represent southern Indus words. For example:
(1) 3959 *gajja 'foam': S. gajī, Ku. N. Bhoj. H. gāj, B. gājā 'frothing'.
(2) 2785 kárañja 'the tree Pongamia glabra' RV: S. karañjho, A. karzā, H. karāj(ā), G. M. karāj, Si. karaňda.
(B) Similarly, entries lacking Sindhi and other southwestern NIA languages may be considered to represent northern Indus words. For example:
(1) 4990 *channa 'jingle': P. chanchan 'jingling', B. chanchan 'sound of urinating', O. chanchan 'unsteady', H. chanchanānā 'to jingle'.
(2) 3983 *gaḍḍ(ar)a 'sheep': L. gaḍ m. ' wild sheep ', B. gāṛal long-legged sheep', O. gāraṛa' ram', H. gāḍar 'ewe'; Deriv. B. gāṛle ' shepherd ', H. gaḍariyā.

On the other hand, words which are strongly represented in the Himalayan languages--particularly the Nuristani languages, which may belong to a separate branch of Indo-Iranian--may be considered as possibly belonging to a pre-Indus stage of OIA. For an example, see sub-entry 8 in Appendix A, which shows widespread distribution in Nuristani as well as in NIA, including Dardic. (Names of Himalayan languages are in bold type.)

3.11. Testing the hypothesis

To what extent can we test the hypothesis that NIA etyma which are represented in Panjabi/Lahnda, Hindi, and an eastern language are residues of the pre-Aryan Indus language? This question can be divided into two interrelated parts: Does the hypothesis accurately describe the Indus language? If so, what are the chronological implications?

3.11.1. The presence of numerous plant names in the list of words which fulfill the distributional criteria provides the possibility of falsifying the hypothesis. For example, words like OIA **pippala** 'pipal tree' and **til** 'sesame' (see 3.9 above) pass the test. On the other hand, an entry like 7073 **nāraṅgá** m. 'orange tree', which has the required distribution of cognates (S. P. **nāraṅgī**, B. **nāraṅg(ī)**, O. **nāraṅgā**, H. **nāraṅg**, G. **nārāgī**, M. **nārāg**), may be considered to have failed the test, because the orange probably originated in eastern India (Simmonds 1976:261-2). On the other hand, the word may nevertheless have existed in the Indus language(s) at some period, which means that we may need to go into the question of chronology (see below).

Thus the fate of the Indus language hypothesis may depend largely on the extent to which evidence can be found to deny the presence of certain botanical species in the Indus region in a certain time period. Only a few non-botanical items are even susceptible of testing, for example 3986 ***gaḍha** 'fort', 5528 ***ḍabba** 'box', 2360 **ulūkhala** 'mortar'; for such items we must ask the archaeologists. On the other hand, if the majority of plant names pass this test, it may give us some confidence in the validity of other categories of words. This testing of botanical names still remains to be done in a systematic way.

3.11.2. **Chronology**: the purpose of this exercise is to reconstruct the Indus language(s) which existed at the time Indo-Aryan-speaking people arrived in the region. I have assumed that the widely-distributed NIA words of non-IE origin cited by Turner, along with similarly distributed words with earlier OIA and/or MIA) attestation, can be attributed to the language(s) of that time and place. Of course, the usual methods of linguistic-philological investigation can be used to weed out many words from other sources. For example, Turner warns us that CDIAL entry 8413 ***pōstaka** 'book', with cognates in S. P. Ku. N. A. O. Mth. Bhoj. Av. H. G. M. and Si.-Md., is based on a loan from Old Persian. But in the last analysis, the distribution and interrelationships of the cognates in each entry will have to be weighed to determine the probabilities.

While the examination of the origins of plant species may be of some help in the attempt to evaluate the probability of a species existing in a certain place at a certain time, this help will be limited. As to the use of texts to establish chronology, it is unfortunate that large numbers of botanical names do not appear before the work of Suśruta, dateable perhaps around the third century CE. Thus we may be obliged to accept a high level of uncertainty in many cases.

The use of the Indus language hypothesis to explain the origins of words which are distributed from the Indus Valley to eastern India and Bangladesh is dependent on the assumption of movements of peoples between these two points. This explanation can only be valid up to a certain time, but it is difficult at present to determine that time. If the Indus language was the main language of the Indus Valley Culture, or one of its main languages, it probably did not disappear when that culture was transformed in the early second millennium BCE. How long did the eastward movements continue? I have suggested elsewhere, on linguistic grounds, that speakers of "outer" Indo-Aryan were still entering the eastern region as late as the mid-first millennium BCE.

3.12. Conclusions

Regarding the Indus language(s), I have suggested that non-Indo-European words which are found in all the major regions of NIA are most likely to have originated in the pre-Indo-Aryan language(s) of the Indus Valley, and to have been carried from there to the different regions by population movements for which there is archaeological, textual, and linguistic evidence. To the extent this hypothesis is plausible in itself, it may be acceptable as a working hypothesis and tested by the means suggested in 3.11 above. The author plans to publish the full Indus vocabulary list on the SARVA website (www.aa.tufs.ac.jp/sarva/entrance.html) in the near future.

APPENDIX A (specimen of an "Indus language" entry from CDIAL):

10917 **laṭṭa**[1] m. 'bad man' lex. (cf. laṭa -- m. 'fool', *laṭaka-* m. 'bad contemptible person' lex.).
2. ***laṭṭha*** -- 1. 3. ***laṭṭhara*** -- . 4. **laḍḍa** -- m. 'wretch, villain' lex. (~ raḍḍa --). 5. ***laḍḍha*** -- . 6. ***laṇṭa*** -- (~ *raṇṭa --). 7. ***laṇṭha*** -- 1 (~ *raṇṭha --). 8. ***laṇḍa*** -- 1 (~ raṇḍa --). 9. ***laṇḍara*** -- . 10. ***laṇḍha*** -- . [Cf. *liṭṭa -- 1, *luṭṭa -- 1, *naṭṭa -- : see list s.v. *lakka -- 1]
1. Ash. *lāṭ* 'lie', Dm. *lâṭ* Morgenstierne Göteborgs Högskolas Årsskrift 1935, 3, 37, Paš.ar. *lōeṭ* (see also 4); K. *loṭu* m. 'accusation, charge (of a crime)'; S. *laṭo* m. 'old garment'; WPah.jaun. *lāṭā* 'dumb', bhal. *leṭṭyoṇū* 'to become dumb'; Ku. *lāṭo* 'fool', *lāṭiṇo* 'to be dumb', *laṭyāso* 'somewhat dumb'; N. *lāṭo* 'fool'; A. *lāṭ* 'wornout'; B. *lāṭ* 'worn -- out, old', sb. 'worn -- out clothes'; Or. *laṭa* 'fault'; H. *lāṭ* 'worn -- out, old', m. 'old clothes', *laṭ* f. 'fault'.
2. S. *lāṭho* 'small, short'; Ku. *laṭhyūṛo* 'idiot, rustic'; N. *lāṭhe* 'stalwart fellow', *laṭṭha* 'intoxicated', *laṭṭhu* 'foolish fellow', *laṭhuwā* 'dumb, stupid', *laṭhyauro* 'half -- dumb'; A. *laṭhā* 'leafless, wifeless', *lāṭhurā* 'wicked'; B. *laṭhuyā* 'profligate'; G. *laṭṭhɔ* m. 'stout fellow', *laṭṭhiṅgū* 'stout, roguish'; M. *lāṭhā* 'barren buffalo', *laṭṭhā* 'monstrously fat', *laṭhūgā* 'stout, sturdy'.
3. Kho. *loṭhoro* 'younger'; A. *laṭhrā* 'devoid of hair or feathers', *laṭhru* 'bald'; H. *laṭṭhar* 'slack'.
4. Wg. *lāṛ* 'lie', Kt. *laḍok*, Paš.laur. *lāḍ*, weg. *lāṛ* (see also 1); A. *lārā* 'destitute of ornaments, bare', sb. 'boy'; Or. (Sambhalpur) *lāṛu* 'bald'; M. *lāḍ* f. 'muckpit'. -- See *laḍikka -- .
5. Mth. *nāṛhā* 'bullock with broken tail'; M. *lāḍhā* 'barren buffalo'.
6. S. *laṇḍo* 'shameless'; P. *laṇḍā* 'tailless, wifeless', *laṇḍūrā* 'tailless, closely trimmed (of tree)', *laṇḍor* 'tailless', f. 'pea -- hen', *°rā* 'tailless'; WPah.jaun. *lāḍā* 'stuttering'; N. *lāṭe* 'disproportionately tall or hefty fellow'; -- K. *lünḍü* f. 'crippled woman', *laṇḍur* 'wifeless' (or < 8).
7. H. *laṇṭh* m. 'fool' (N. *laṇṭha*); G. *lāṭh* 'stout, rude', *lāṭhɔ* m. 'paramour'; M. *lāṭh*, *°ṭhā* 'sturdy, rude'.
8. Pk. *laṁḍua* -- 'rejected'; **Ash.** *le/ṇḍe* 'bald', **Wg.** *läṇə*, **Kt.** *laṇë*; **Paš.kuṛ.** *laṇ* 'short'; **Kho.** *laṇḍi* 'concubine, harlot' (*a*?); K. *lünḍü* f. 'crippled woman' (or < 6); Or. *laṇḍā* (f. *lāṇḍi*), *naṇḍā* 'bald, shorn', (Sambhalpur) *lāṛu* 'bald'; H. *lāḍā*, *lāḍūrā* 'tailless'; G. *lāḍor* 'dissipated, rascally'; M. *lāḍā* 'crop -- tailed', *lāḍī* f. 'an impotent', *lāḍūr*, *°ḍor* f., *lāḍrū* (after animal names in *-rū* < -- rūpa --) n. 'peahen'; Si. *naḍaya* 'dirt' (or < *naḍḍha --); -- Ḍ. *lon* 'penis', **Wg.** *lāṇḍ*, *lāṇ*, **Dm.** *laṇḍa*, *laṇ*, **Tir.** *laṇḍ*; **Paš.laur.** *laṇḍī* 'vulva', **weg.** *laṇ* 'penis', **Shum.** *lāṛ*, **Woṭ.** *laṇḍ*, **Gaw.** *lāṇḍ*, **Bshk.** *laṇḍ*, **Sh.jij.** *loṇ*, (Lor.) *lon*, S. *lanu* m., L. (Ju.) *lan* m., P. *lann* m., **WPah.bhal.** *laṇḍ* n.; **Ku.** *lāṇ*, *laṇḍ* 'penis', **gng.** *lāṇ* 'testicle'; N. *lāṛo* 'penis', Mth. *nāṛ*, Bhoj. Aw.lakh. *lāṛ*, *laṇḍ*, H. *lāṛ*, *lāḍ* m., M. *lāḍ*, *°ḍā* m.
9. Kal.rumb. *lāṇḍra* 'hairless, tailless'; Kho. (Lor.) *luṇḍur* 'ill -- shaped person'; K. *laṇḍur* 'wifeless' (or < 6).
10. Bi. *lāṛhā*, (Patna) *laṇḍhā* 'ox with broken tail'. *nirlaṇḍa -- .
Addenda: **laṭṭa** -- 1 [Cf. *laṭyati* 'speaks foolishly' lex.]
1. WPah.ktg. (kc.) *laṭɔ* 'dumb'.
2. A. also *lāṭhuwā* 'vicious' AFD 206.
7. ***laṇṭha*** -- 1: WPah.ktg. *láṇṭh* m. 'bachelor' H. Him.I 192.
8. ***laṇḍa*** -- 1: WPah.ktg. (kc.) *lāṇḍ* m. 'penis'.

APPENDIX B. ABBREVIATIONS

(For abbreviations used in CDIAL entries, see CDIAL xi-xx.)

A	Assamese (Ahom)
AV	Atharvaveda
Av	Avadhi (NIA)
B	Bangla (Bengali) (NIA)
BCE	before current era
Bhoj	Bhojpuri (NIA)
Bi	Bihari (NIA)
Br	Brahui (Drav.)
Bur.	Burushaski
CD	Central Dravidian
CDIAL	= Turner 1966 (see References)
CE	current era
DEDR	= Emeneau & Burrow 1984)
Dr	Dardic
Drav	Dravidian
G	Gujarati (NIA)
Ga	Gadaba (Drav.)
Go	Gondi (Drav.)
H	Hindi (NIA)
IA	Indo-Aryan
IIr	Indo-Iranian
K	Kashmiri (NIA)
Ka	Kannada (Drav.)
Kd	Konda (Drav.)
Kg	Kodagu (Drav.)
Ki	Kui (Drav.)
Kol	Kolami (Drav.)
Ko	Kota (Drav.), Konkani (NIA)
Ku	Kudux (Drav.); Kurku (Munda), Kumaoni (NIA)
Kv	Kuvi (Drav.)
L	Lahnda (eastern Panjabi)
M	Marathi (NIA)
Ma	Malayalam (Drav.)
Md	Manda (Drav.), Maldivian (NIA)
MIA	Middle Indo-Aryan
Mt	Malto (Drav.)
Mth	Maithili (NIA)
N	Nepali (NIA)
ND	North Dravidian
NIA	New [= modern] Indo-Aryan
Nk	Naiki (Drav.)
O	Oriya (NIA)
OB	Old Bangla (old Bengali) (NIA)
OIA	Old Indo-Aryan
P	Panjabi (NIA)
Pa	Parji (Drav.), Pali (MIA)
p. c.	personal communication
PCD	Proto-Central Dravidian
PD	Proto-Dravidian
Pe	Pengo (Drav.)
PIE	Proto-Indo-Europeam
PIIr	Proto-Indo-Iranian
Pkt	Prakrit (MIA)
PSD	Proto-South Dravidian
PSD1	Proto-South Dravidian-1
PSD2	Proto-South Dravidian-2
RV	Rigveda
S	Sindhi (NIA)
SD	South Dravidian
SD1	South Dravidian-1
SD2	South Dravidian-2
Si	Sinhala (Sinhalese) (NIA)
Skt	Sanskrit
T, Ta	Tamil (Drav.)
Te	Telugu (Drav.)
To	Toda (Drav.)
Tu	Tulu (Drav.)

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The prehistory of Tibeto-Burman and Austroasiatic in the light of emergent population genetic studies

George van Driem

The Tibeto-Burman language family was first identified by Julius von Klaproth in 1823. The contours of the Austroasiatic language family were first recognised by Francis Mason in 1854. These two linguistic phyla represent keystones for our understanding of the ethnolinguistic prehistory of Asia. What light have recent population genetic studies begun to shed on the models of linguistic relationship? How can the pictures of our linguistic prehistory, our biological ancestry and the archaeological record be correlated to reconstruct the peopling of Asia? What type of questions can we ask of the three distinct data sets?

1. TIBETO-BURMAN

In 1823, Julius Heinrich von Klaproth presented a polyphyletic view of Asian linguistic stocks. He did not presume that the twenty-three distinct families which he had identified represented the definitive inventory. One of the linguistic phyla which he distinguished comprised Tibetan, Chinese and Burmese and all languages that could be demonstrated to be genetically related to these three. Klaproth explicitly excluded languages known today to be members of the Daic or Kra-Dai family, e.g. Thai, or members of the Austroasiatic family, e.g. Vietnamese and Mon (1823: 363-365).

Klaproth did not devise labels for each language phylum he identified. In 1852, John Logan became one of the first to use the term 'Tibeto-Burman' for the phylum identified by Klaproth encompassing Tibetan, Chinese and Burmese, to which Logan added Karen and numerous related languages. Charles Forbes noted that 'Tibeto-Burman' had become the accepted English term for this family (1878: 210). Robert Cust also treated 'Tibeto-Burman', including Karen, as a family distinct from the 'Tai' and 'Mon-Anam' families (1878). Bernard Houghton, who conducted research on languages of Burma, likewise recognised Chinese to be a member of Tibeto-Burman (1896: 28).

Klaproth's Tibeto-Burman outlasted other less well-informed models of language relationship, such as Japhetic, Atactic and Turanian. However, the empirically unsupported Indo-Chinese theory, renamed *sino-tibétain* in

1924, still has its adherents today.[1] The main tenet of the Sino-Tibetan model is that all non-Sinitic languages form a single unitary branch together denominated 'Tibeto-Burman'.[2] The truncated or pinioned 'Tibeto-Burman' of the Sino-Tibetanists must not be confused with Tibeto-Burman proper, which encompasses Sinitic as one of its subsidiary branches. Tibeto-Burman in its original sense is defined by Tibetan, Burmese and Chinese and furthermore comprises all demonstrably related languages. Diagram 2 illustrates the many new Tibeto-Burman languages and subgroups that have been recognised since 1823.

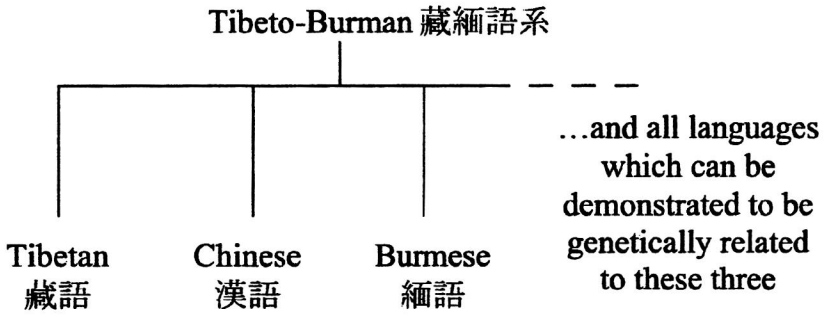

DIAGRAM 1: One of the language families identified by Julius Heinrich von Klaproth in his polyphyletic view of Asian linguistic stocks (1823). He explicitly excluded languages today known to be Kra-Dai or Daic (e.g. Thai, Lao, Shan) and known to be Austroasiatic (e.g. Mon, Vietnamese, Nicobarese, Khmer).

In 2001 in Cambridge, I introduced the metaphor of fallen leaves illustrated in Diagram 2 (van Driem 2001, 2002). The model attempts to identify the constituent branches of the family and draw the focus of attention back to the centre of Tibeto-Burman linguistic diversity, which lies in the eastern Himalayas and the Indo-Burmese borderlands. The patch of fallen leaves on the forest floor provides a more informative framework because all recog-

---

[1] The term *sino-tibétain* was coined as a new name for Indo-Chinese by Jean Przyluski (1924) and later introduced into English as 'Sino-Tibetan' by Przyluski and Luce (1931).

[2] The rise and fall of Sino-Tibetan and its racist underpinnings were discussed in the keynote address to the joint meeting of the 14th Annual Conference of the International Association of Chinese Linguistics and the 10th International Symposium on Chinese Languages and Linguistics at the Academia Sinica in Taipei on 27 May 2006.

nised subgroups are presented without a false or, at best, unsupported tree, such as Sino-Tibetan. The new metaphor still implies the existence of a tree, but we cannot lift our gaze from the forest floor to see the tree because we cannot look directly into the past. Instead, historical comparative work may enable us to see the shadows which the branches cast between the leaves on the forest floor.

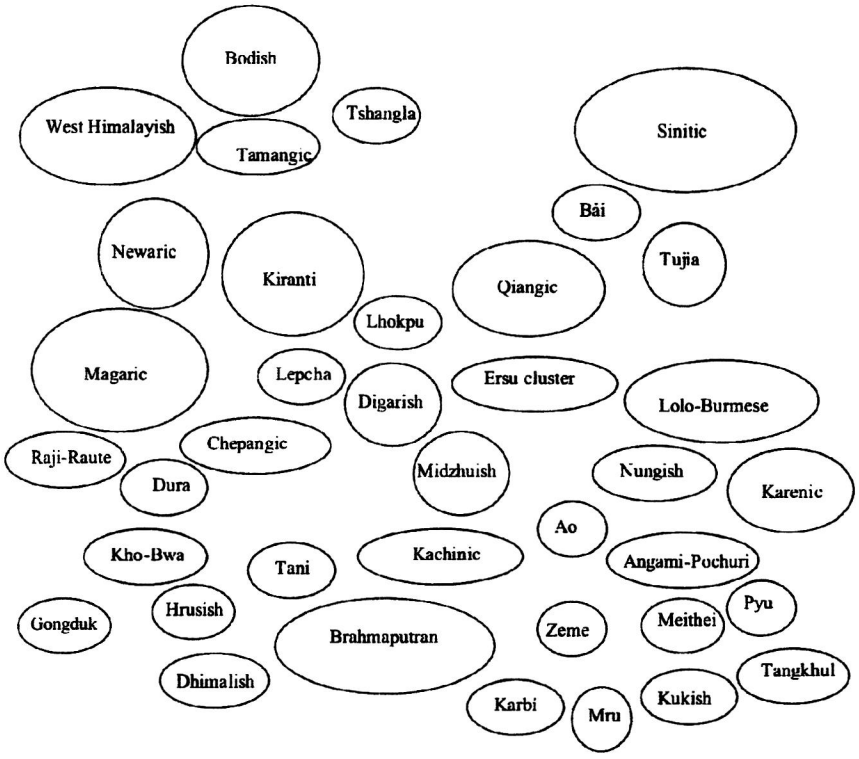

DIAGRAM 2: Tibeto-Burman subgroups identified since Julius von Klaproth. Brahmaputran may include Kachinic and Dhimalish. Other subgrouping proposals are discussed in the handbook (van Driem 2001).

Whether a language family appears to be more rake-like or more tree-like is often a function of the state of the art in historical comparative linguistics rather than a statement about linguistic phylogeny. With the inexorable progress of Indo-European studies, even the twelve branches of this most well-studied language family, once depicted in the pleasing shape

of August Schleicher's branching oak, have also gradually assumed a more rake-like appearance and so too come closer to the fallen leaves model.

The geographical distribution of the branches of the Tibeto-Burman language family reveals an intriguing pattern which raises questions and permits us to formulate hypotheses about the provenance of the linguistic ancestors of Tibeto-Burman language communities and the location of the Tibeto-Burman homeland. Future research will show the number of diamonds representing branches of the family to be more or less than shown in Diagram 3. Some groups may coalesce, and others may be split up. For example, the Dura language may one day be demonstrated to be a member of another known Tibeto-Burman subgroup, whereas 'Qiāngic', as currently conceived, could turn out not to be a valid clade at all but to consist of a number of independent clusters. In Diagram 2, the Ěrsū cluster is another name for 'Southern Qiāngic', and may in fact consist of several subclusters. Qiāngic is 'Northern Qiāngic', which is currently supposed to include the rGyal-rongic group recognised by Jackson Sun (Sūn Tiānxīn) and Huáng Bùfán. In fact, the precise phylogenetic relationships between the diverse rGyal-rong languages, Ěrgōng, Qiāng, Mi-ñag (Mùyǎ), Tangut, Ěrsū, Lǔsū, Tosu (Duōxù), Nàmùyì, Shǐxīng, Guìqióng, Choyo (Quèyù), Zhābà and Prinmi (Pǔmǐ) have yet to be demonstrated. In short, there is a lot of work left to be done in Sìchuān and Yúnnán provinces.

Just like British scholars of the nineteenth century, Jaxontov proposed a homeland in Sìchuān (1977). Subsequently, so did I (van Driem 1998). Peiros' classification based on the highest lexicostatistical diversity of primary taxa purportedly indicates 'a possible location of the homeland in the territories south of the Himalayas', whereas the location of Sinitic could be 'easily explained as the result of later migration' (1998: 217). In December 2004 at the 10th Himalayan Languages Symposium in Thimphu, I presented the argument of the internal linguistic diversity of the family for a Himalayan homeland for Tibeto-Burman. Questions of linguistic phylogeny are fundamentally resolved by historical linguistic comparison, but the location of the Tibeto-Burman homeland is not just a linguistic question.

In addition to the comparative method, new mathematical models which aid lexicostatistical comparison may prove a useful tool. Elsewhere I have discussed the history of lexicostatistics since its invention by Rafinesque in 1831 (van Driem 2005). From the time of Dumont d'Urville (1834), the real advantages as well as the limitations of Rafinesque's method of lexicostatistics have become increasingly evident if the methodology is applied without the insights of historical linguistics. Hendrik Karel Jan Cowan (1959) was amongst the first to stress that practitioners of glottochronology

and lexicostatistics then appeared oblivious to the far greater probabilistic significance of structural correspondences between grammatical systems. A second flaw in the reasoning of glottochronology is that different languages are historically known to have changed at different rates. Finally, the validity of some of the mathematical models employed in glottochronology was also challenged, e.g. Bergsland and Vogt (1962), Chrétien (1962), Guy (1994).

More recently, however, mathematical models used in glottochronology have undergone refinement, e.g. Gray and Atkinson (2003). Russell Gray is making every attempt to accommodate the criticisms of comparative linguists and so increasingly to incorporate historical linguistic insights into his mathematical model. Such models appear to work fine for Austronesian, a language family in which cognacy judgements are relatively non-controversial. However, the model can give false and misleading results when based on cognacy judgements for language families where such judgements are difficult and more controversial, e.g. Tibeto-Burman. In other cases, the putative phylogenetic construct is purely hypothetical and the cognacy judgements remain speculative, e.g. Sagart's Sino-Austronesian, Starostin's Sino-Caucasian (cf. van Driem 2005). Whenever many of the supposed cognates are not in fact cognate or the putative phylogenetic construct does not correspond to any reality that ever existed in the past, then the numbers churned out by the mathematical model will be meaningless, however good they may look.

As long as the caveats regarding lexicostatistical models are kept in mind, then there need not be much harm in using these potentially useful tools. The lexicostatistical attempt by Dèng and Wáng (2003) to arrive at a tree of some of the Tibeto-Burman languages spoken in China is a good beginning. Such studies will in time hopefully be extended to cover the Tibeto-Burman language family as a whole, most branches of which are represented exclusively outside of China.

DIAGRAM 3 next page: The geographical distribution of the major branches of the Tibeto-Burman. Each diamond represents not a language, but a major subgroup.

At the same time, attempts have been made by various scholars to go beyond the maximum time depth usually considered accessible to practitioners of historical linguistic comparison. For example, Dunn *et al.* (2005) have attempted to use typological features to go beyond the time depth of 8,000 years, give or take two millennia, reconstructible by conventional historical linguistics. They arrive at a tree for the hitherto unrelatable Papuan isolates of island Melanesia, which suggests to them a late Pleistocene dispersal, now visible only as vestigial structural similarities between the languages and no longer in the form of any reconstructible vocabulary or morphology. In a similar vein, Johanna Nichols (1992, 1998) has invoked her notion of a diffusion or spread zone to the Eurasian heartland, but Michael Fortescue (1998) has shown that such notions can only be meaningfully implemented when the comparative method has first taken us as far back as it can take us.

In the case of Tibeto-Burman, it would be premature to use typological comparison of this sort to attain benthic time depths. By the same token, expediency would appear to be the principal motivation behind a rush to use mathematical tools for lexicostatistical comparison at a time when most Tibeto-Burman languages have yet to be documented in adequate detail and historical linguistic comparison has yet to be carried out to anything approaching a satisfactory degree of refinement.[3]

2. AUSTROASIATIC

The contours of the Austroasiatic language family were identified by the American Baptist missionary Francis Mason (1854, 1860), when he realised that Munda languages of India, such as Kol and Ho, belonged to the same language family as Mon or 'Talaing', spoken in and around Pegu in Burma. Julius von Klaproth had previously recognised that there existed a family of languages encompassing Mon, Vietnamese (then more commonly known as 'Annamitic'), Khmer and Nicobarese. The family subsequently became known as Mon-Annam or Mon-Khmer, but, after Mason's addition of the Munda languages, the name 'Mon-Khmer-Kolarian' came into circulation for the phylum as a whole. Subsequently this unwieldy name was replaced by 'Austroasiatic', a coinage of the Austrian priest Wilhelm Schmidt (1904,

[3] The Trans-Himalayan Database Programme <www.iias.nl/himalaya/> serves both traditional historical linguistic comparison and aims to collaborate with the lexicostatistical programme developed by Russell Gray and his associates.

Japan
Korea
Philippines
S.Iberia
Mongolia
Inner Mongolia
China
South China Sea
Vietnam
Laos
Thailand
Cambodia
Kazakstan
Kyrgyzstan
Chinese Turkestan
Tibet
Bhutan
Burma
Bangla-desh
Nepal
India
Bay of Bengal
Uzbekistan
Tajikistan
Turkmenistan
Afghanistan
Pakistan
Iran
Arabian Sea

1906). Schmidt's new label stuck even though his ideas about the family were decidedly fuzzier than those of some of his precedessors.

Austroasiatic is a sorely neglected field of linguistics that has been kept alive by a very few passionate and knowledgeable scholars.[4] Paradoxically, the level of scholarship in Austroasiatic linguistics is such that this family, unlike Tibeto-Burman, at least has a tentative family tree. Currently, the most informed and authoritative Austroasiatic *Stammbaum* is the language family tree presented by Diffloth (2001, 2005), reproduced in modified form in Diagram 4. In contrast to earlier family trees, Diffloth's Austroasiatic family splits up into three major nodes, i.e. Munda, Khasi-Khmuic and a new 'Mon-Khmer'. In this new tripartite division, Munda is still one of the primary branches of Austroasiatic, representing the native heart of the Indian subcontinent. The Khasi-Khmuic branch represents what might be thought of as 'Inland Austroasiatic', and a more precisely delineated Mon-Khmer represents 'Littoral Austroasiatic'.

The new Mon-Khmer comprises Khmero-Vietic and Nico-Monic. Each of the two sub-branches of Mon-Khmer is further subdivided, with Nico-Monic consisting of Asli-Monic and Nicobarese, and Khmero-Vietic breaking up into Vieto-Katuic and Khmero-Bahnaric. Conspicuously, Diffloth had initally left out Pearic on purpose because its genetic affinity was still, as he put it, *en chantier,* but it is at least safe to say that its greatest genetic affinity is not with the Munda or Khasi-Khmuic branches, but with Mon-Khmer. Many more phylogenetic insights are contained in Diffloth's burgeoning, highly detailed but as yet unpublished Austroasiatic comparative database.

DIAGRAM 4 next page: Austroasiatic with Gérard Diffloth's tentative calibration of time depths for the various branches of the language family (modified from Diffloth 2001, 2005). The precise phylogenetic propinquity of Pearic, after Khmeric loan layers have been stripped off, remains uncertain except that Diffloth observes that Pearic is Mon-Khmer and not 'une espèce de vieux khmèr', as some scholars once maintained. This diagram arranges in a tree-shaped phylogeny the fourteen recognised branches of Austroasiatic, i.e. North Munda, South Munda, Khasian, Pakanic, Palaungic, Khmuic, Vietic, Katuic, Bahnaric, Khmeric, Pearic, Monic, Aslian and Nicobarese.

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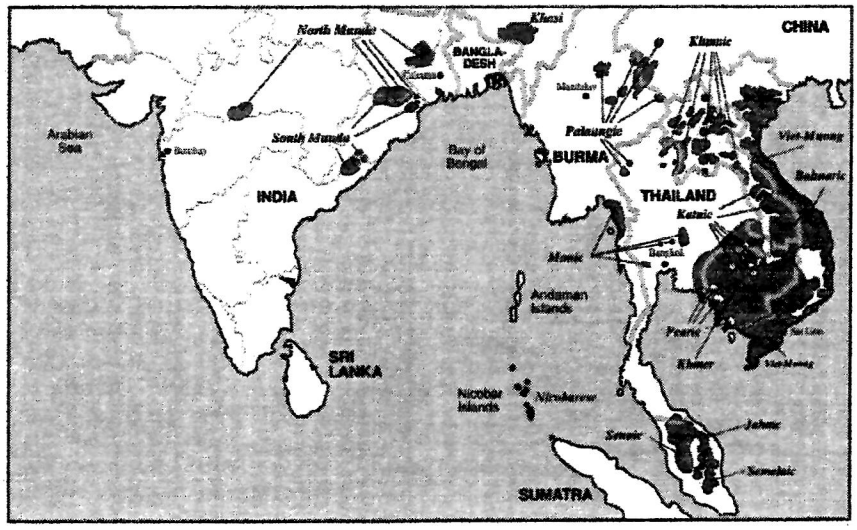
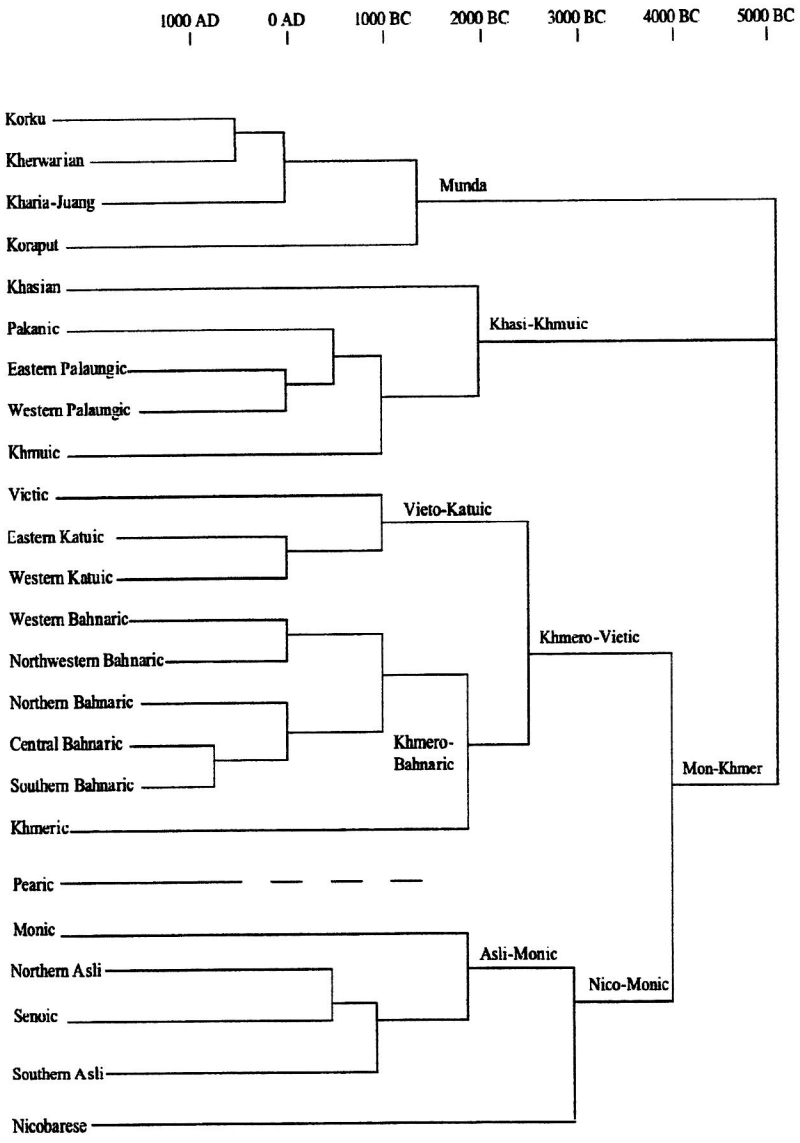
[4] The International Conference on Austroasiatic Linguistics, a forum which convened only twice in the 1970s, has recently been resurrected. See <www.iias.nl/icaal>.

Any reconstruction of Austroasiatic population prehistory must start out from the present and historically attested geographical distribution of Austroasiatic subgroups. Diagram 5 shows the geographical distribution of Austroasiatic subgroups with the exception of the recently documented enclaves of Pakanic in southern China. We can all look forward to Gérard Diffloth's new detailed Austroasiatic map which is currently in production. When we compare the new phylogenetic model for Austroasiatic with the geographical distribution of Austroasiatic subgroups, a number of hypotheses concerning the possible location of an Austroasiatic homeland suggest themselves. In fact, in the past the most diverse homeland sites have been proposed for Austroasiatic, and most of these are discussed in my handbook (van Driem 2001: 289-332).

DIAGRAM 5: Geographical distribution of Austroasiatic subgroups (van Driem 2001: 267). Recently documented Pakanic enclaves in southern China are not yet shown.




1000 AD
0 AD
1000 BC
2000 BC
3000 BC
4000 BC
5000 BC
Korku
Kherwarian
Kharia-Juang
Koraput
Munda
Khasian
Pakanic
Eastern Palaungic
Western Palaungic
Khmuic
Khasi-Khmuic
Vietic
Eastern Katuic
Western Katuic
Vieto-Katuic
Western Bahnaric
Northwestern Bahnaric
Northern Bahnaric
Central Bahnaric
Southern Bahnaric
Khmero-Bahnaric
Khmeric
Khmero-Vietic
Mon-Khmer
Pearic
Monic
Northern Asli
Senoic
Southern Asli
Asli-Monic
Nico-Monic
Nicobarese

On the basis of linguistic palaeontology Diffloth has argued that the reconstructibility at the Proto-Austroasiatic level of words for tree monitor, ant eater, buffalo, mountain goat, bear cat, elephant, peacock, rhinoceros and bamboo rat as well as the rich reconstructible rice cultivation vocabulary imply that the Austroasiatic homeland was located in the tropics. The Hémǔdù culture at the mouth of the Yangtze (5000-4500 BC) provides the best unambiguous evidence for a population for whom rice is the staple. The oldest direct evidence for domesticated rice, however, dates from 6500 BC and is from the Bāshídàng and Péngtóushān sites belonging to the Péngtóushān culture (7500-6100 BC) on the middle Yangtze in what today is Húnán and from the Jiǎhú culture (6000-7000 BC) on the Huái river further north in what today is Hénán.

Since the archaeological sites reflecting the oldest known rice cultivators are located along the middle Yangtze, Diffloth logically raised the palaeoclimatological question whether the faunal landscape which existed in this area at the putative time depth of Proto-Austroasiatic would be compatible with the environment suggested by linguistic palaeontology. Clearly, by the faunal criterion large tracts of the Indian Subcontinent and Southeast Asia also remain homeland candidates.

Any successful correlative study of the historical linguistic picture and the population genetics of the the modern language communities will have to provide an account for the manifest somatological or phenotypical difference between Munda speakers on one hand and speakers of Khasi-Khmuic and Mon-Khmer languages on the other, as well as comparably great differences between Aslian negrito groups and the linguistically closely related Nicobarese. The meaningfulness of any conjectures that we base on such correlative studies depends on the reliability of the linguistic reconstructions and language family tree as well as on the degree of resolution, refinement and thoroughness of sampling of our genetic assays.

Operating on the assumption that frequency gradients of Y haplogroups, mtDNA polymorphisms or autosomal haplotypes may correlate precisely or partially with the distribution of Austroasiatic language communities, we may still wonder whether such gradients necessarily reflect the people who introduced and disseminated any putative proto-language.

3. AUSTROASIATIC: LANGUAGES, GENES AND ARCHAEOLOGY

The linguistic ancestors of a language community were not necessarily the same people as the biological ancestors of that community. We invariably get all of our DNA from our biological parents, but only in most cases is our native language also that of our parents. So, notwithstanding the probabilistic correlation between languages and genes, the discrepancies between the two versions of prehistory can tell us at least as much about what went on in the past as the grand correlations.

The genetic picture also shows a certain sexual dimorphism in linguistic prehistory. In Baltistan, located in what today is northern Pakistan, the local Tibetan dialects are the most conservative of all Tibetan languages, preserving consonant clusters retained in Classical Tibetan orthography but wholly lost in most other Tibetan dialects. Yet the Balti abandoned the Tibetan script after they were converted to Islam in the fifteenth century, although native activists have in recent years begun reintroducing the Tibetan script, e.g. on shop signs, to the displeasure of central government authorities. Paradoxically, the old consonant clusters ceased to be pronounced as such in most areas throughout Tibet where the conservative indigenous orthography representing these phonological segments remained in use. Genetic studies of the Balti populations show intrusive Y haplogroups from the Near East, whereas the mitochondrial DNA of the Baltis is predominantly Tibetan mtDNA (Poloni *et al.* 1997, 2000, Zerjal *et al.* 1997, Quintana-Murci *et al.* 2001, Qamar *et al.* 2002). So, the religion of the Balti appears to be a paternal heritage, whilst the languages that they speak are literally mother tongues.

Genetic studies have suggested that the distribution of Indo-Aryan language communities in northern India patterns well with intrusive Y haplogroup frequencies emanating from the northwest, reflecting what many linguists and archaeologists had long thought about Indian prehistory. The picture of an Aryan invasion emerging from the Ṛgveda, in the words of Mortimer Wheeler, 'constantly assumes the form of an onslaught upon the walled cities of the aborigines', i.e. the *puras*, and the Aryan god Indra is a *puraṃdara* 'destroyer of aboriginal forts', who shattered ninety such strongholds (1966, 1968). Many scholars have connected this destruction of aboriginal fortresses and the conquest of subjugated Dasyus recounted in the Aryan hymns to the extinguishing of the Indus Valley civilisation. At any rate, the activities depicted were a predominantly male occupation. Genetic studies have suggested that the Y haplogroups L, R1a and R2 spread from the northwest along with Indo-Aryan language across northern India and to

Ceylon, whereas mitochondrial lineages prevalent in India are overwhelmingly indigenous to the Subcontinent (Kivisild *et al.* 1999a, 1999b, Wells *et al.* 2001, Cordaux *et al.* 2003, Kivisild *et al.* 2003, Baig *et al.* 2004, Cordaux *et al.* 2004a, Metspalu *et al.* 2004, Quintana-Murci *et al.* 2004, Thangaraj *et al.* 2005). At the same time, the spread of Indo-Aryan languages unambiguously attests to an ancient linguistic intrusion into the Subcontinent from the northwest.

So, were Vedic and Avestan introduced as father tongues? At the Indo-Pacific Prehistory Association conference in Taipei in 2002, I gave the name 'Father Tongue hypothesis' to the correlations observed between language spread and the geographical distribution of Y haplogroup frequencies by Poloni *et al.* (1997, 2000). One of the areas where this hypothesis appeared to hold was the linguistic intrusion of Indo-European into the Indian subcontinent from the northwest. A recent study by Sahoo *et al.* (2006), however, attempts to challenge this Y chromosome picture which has emerged from several previous population genetic studies.

Their study is a major leap forward, but the sampling is still coarse, and the survey neglects to systematically distinguish between Turks, Kurds and other language communities in the Near East and between Indo-Iranian and Turkic language communities in Central Asia. A fine-mesh and more ethnolinguistically informed sampling remains a realisable goal. More crucially, the reasoning in Sahoo *et al.* (2006), edited by Colin Renfrew, omits to take note that Central Asia saw major incursions of Altaic populations in historical times. An ethnolinguistically low-resolution survey of present Central Asia Y chromosomal genography cannot be presumed to reflect the genography of the region during, say, the Bronze Age Andronovo culture and the Bactria Margiana archaeological complex.

In fact, the probable replacement of Y chromosomal lineages during the Altaicisation of Central Asia is consonant with the observation made by Sahoo *et al.* (2006) that the Y haplogroups E, I, G, J* and R1*, which have a combined frequency of 53% in Turks of Asia Minor and 24% in Central Asia, are virtually absent in India, except for a trickling of R1*. Also absent in India are haplogroups C3, D, N and O, which are 'specific to Central Asia', where they have a combined frequency of 36%. Likewise, the complete absence in India of the derived C3 lineages, which account for over 95% of the C haplogroup variation in Central Asia, 'cannot be ascribed to a recent admixture from the north' (op.cit. 845). At the same time, the J2 haplogroup, which appears to emanate from the Arabian Peninsula and, unlike haplogroups N and R1a, attains no high frequency in Ceylon, 'indicates an unambiguous recent external contribution, from West Asia

rather than Central Asia' (op.cit. 87), and indeed this gradient probably reflects the historically attested male-borne eastward spread of Islam.

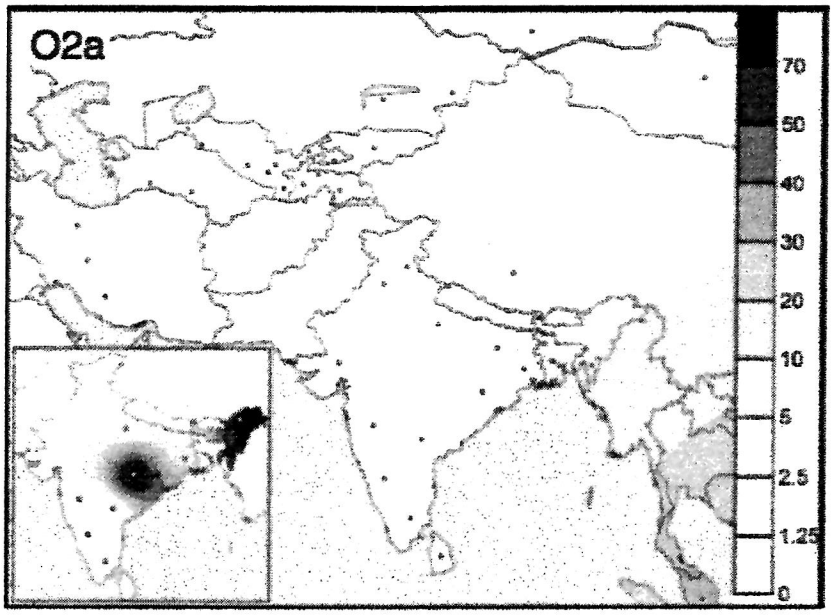
The population genetic work is ongoing, and some preliminary findings are prone to being interpreted prematurely in terms of their potential significance for population prehistory. Just two years ago, an article by Langstieh *et al.* (2004) created a stir amongst scholars of Khasi because the study addressed the provenance of the Garos and Khasis of the Meghalaya. This valuable contribution raised more questions than it answered. The researchers claimed that the population of the Meghalaya is homogeneous, whereas the Garos and Khasi tribes are linguistically unrelated. Judging from their median joining network, the Garos would appear to be an ethnic subset of the Khasis, something which suggests that the Garos are more homogeneous as a group than the Khasi tribes. Moreover, the purported homogeneity of the populations of the Meghalaya was based on comparsion with the Chinese and North American indians! Obviously it would be more meaningful to conduct fine-mesh genetic comparison of the Khasi with Pakanic, Palaungic and Khmuic language communities, who are their closest linguistic relatives. By the same token, fine-mesh studies should be undertaken to compare the Garos with the Bodos, Rabhas and Dimasas, who are their closest linguistic relatives, as well as other linguistically less related population groups of northeastern India.

Microsatellites or short tandem repeats (STR) are highly polymorphous, but the short tandem repeats chosen by Langstieh *et al.* were not necessarily the optimal choice as genetic markers for gauging differences between closely related populations. In all of the Himalayan groups which we have been testing — and our sampling represents a highly varied and heterogeneous collection of peoples and language communities — we do not always see that much variation in the short tandem repeats as these researchers have found in the Meghalaya (Kraaijenbrink *et al.* 2006a, 2006b, Parkin *et al.* 2006a, 2006b). So, the peoples of the Meghalaya show up as a highly heterogeneous population, but the researchers cannot yet know this for sure, for they have not been able to compare their findings with data on other relevant groups. Further studies will have to corroborate the impression that the Meghalaya may be an area where the antiquity and genetic heterogeneity of the populations is relatively great.

In addition to the studies already mentioned, relevant population genetic studies have begun to chart the autosomal lineages, the mitochondrial or maternal lineages and the Y chromosome haplogroups representing the paternal lineages of Austroasiatic language communities and neighbouring population groups, e.g., Ashma *et al.* (2002), Banerjee *et al.* (2005a, 2005b),

Debnath and Chaudhuri (2005), Ding *et al.* (2000), Kashyap *et al.* (2002a, 2002b), Krithika *et al.* (2005), Kumar *et al.* (2004), Maity *et al.* (2003), Sahoo *et al.* (2002), Shi *et al.* (2005, 2006), Singh *et al.* (2006), Sù *et al.* (1999, 2000), Thomas *et al.* (2004), Watkins *et al.* (2005).

DIAGRAM 6: Spatial frequency distribution of Y haplogroup O2a for caste populations [big map] and tribal populations [inset map], reproduced here from Sahoo *et al.* (2006: 846).



Much progress has been made in Y chromosome phylogeny since the seminal contribution by Underhill *et al.* (2001). A number of research teams have mooted a possible link between the distribution of Austroasiatic language communities and the M95 mutation, i.e. Y chromosomal haplogroup O2a, e.g. Sù *et al.* (2000), Kayser *et al.* (2003), Kivisild *et al.* (2003), Cordaux *et al.* (2004b). Frequency gradients for Y haplogroup O2a are mapped for the Indian Subcontinent and Southeast Asia by Sahoo *et al.* (2006) and are shown here in Diagram 6. At the same time, maternal lineages of Munda groups appear to be old and indigenous to the Subcontinent, as indeed can

be said of many Indian mitochondrial lineages (Kivisild *et al.* 1999a, 1999b, 2003).

Chaubey (2006) has ascertained that R7a is a salient mitochondrial haplogroup characterising Munda language communities in Jhārkhaṇḍ, Chattīsgaḍh and Bihār and that the related mtDNA haplogroup R7b features saliently in maternal lineages of Dravidan tribal populations in the same geographical range, where they generally inhabit more southern portions of this area than the Munda language communites. The R7 lineage is hardly found outside of this geographical area, is exceedingly rare in caste populations and has not been found in Tibeto-Burman populations. Does R7 then represent the maternal signature of an ancient indigenous South Asian population to whom ancient bearers of the Y-chromosomal haplogroup O2a introduced Austroasiatic language from the northeast whilst other ancient males introduced Dravidian language from the west? What seems to be clear from the mitochondrial picture at any rate is that the Munda maternal lineage derives from early human settlers of the Subcontinent, whilst one of the predominant Y chromosome haplogroups in Austroasiatic language communities in India argues for a Southeast Asian paternal homeland for Austroasiatic.

Sahoo *et al.* (2006: 847) rightly caution 'against simplistic interpretations of either linguistic or genetic correlations'. By the same token, some of the formulations in Sahoo *et al.* (2006) provide grounds for cautioning against the use of a single explanatory model in our interpretation of the genetic, archaeological and linguistic data. Portions of the article reflect a *Hineininterpretieren* of the Farming-Language Dispersal theory into the genetic findings. This slant in no way diminishes the value of the correlation of the Y chromosomal haplogroup O2a with the geographical distribution of Austroasiatic language communities proposed by various research teams, viz. Sù *et al.* (2000), Kayser *et al.* (2003), Kivisild *et al.* (2003), Cordaux *et al.* (2004b), Sahoo *et al.* (2006). Yet this single-model interpretation of genetic findings raises a more general issue which is of central relevance to the ways that we think about the prehistory of language families such as Austroasiatic.

It is tempting to assume that genes, languages and archaeological horizons have always tended to move in tandem with the incremental spread of Neolithic agriculture and to convince ourselves that this model generates the most parsimonious explanations. In fact, realities on the ground were often more complex. This complexity is not only suggested by the dissonance between the different pictures of prehistory reconstructible through the three disciplines, but more so by the multi-layered nature of the distinct pictures which emerge from linguistics, population genetics and archaeology. For

example, Ossetian, an East Iranian language is spoken in an area which lies decidedly to the west of most West Iranian language communities, attesting to the ancient migration of the Alans and Sarmatians to the north central Caucasus.

The geographical distribution of gene frequencies not only reveals distinct migrations, sometimes in opposing directions at different time depths, but detailed future studies may also enable us to ascertain the relative chronology of the distinct layers of genetic diffusion at different times across the same areas. Archaeology defines specific cultural assemblages with definable horizons and identifiable colonial exponents. The farming-language dispersal model necessarily works in the case of Austronesian, where the geographical spread of the language family has to a major extent resulted from the colonisation of previously uninhabited insular environments emanating from Formosa, or perhaps from Hémǔdù via Formosa.[5] Yet we must question whether the latter theory has the same explanatory power to account for the spread of language families under the circumstances which prevailed on the land masses where most of prehistory unfolded. For an archaeologist contemplating language families, the urge is inevitably irresistible to associate the geographical spread of technologically advanced Neolithic civilisations into more backward areas with the spread of peoples and language families.

More fundamentally, the premisses of the farming-language spread theory ought to be questioned. The surplus generated by an agricultural economy and the stratified social and command structure enabled by a Neolithic lifestyle are held to have driven demographic spread into many areas. This argument is plausible, but this argument is not the crux of the farming-language dispersal theory. Crucial to the model is the tenet that the incremental spread of the Neolithic as such is associated with 'the foundation dispersals' of language families. This theory therefore presumes that the ancient spread of language families unfolded in the same direction as the demographic spread driven by Neolithic agriculture.

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[5] The Hémǔdù culture at the mouth of the Yangtze (5000-4500 BC) provides the best unambiguous evidence for a population for whom rice is the staple. The oldest direct evidence for domesticated rice, however, dates from 6500 BC and is from the Bāshídàng and Péngtóushān sites belonging to the Péngtóushān culture (7500-6100 BC) on the middle Yangtze in what today is Húnán and from the Jiǎhú culture (6000-7000 BC) on the Huái river further north in what today is Hénán. Cultivated rice has been recovered from 南關里 Nánguānlǐ in southeastern Táiwān dating from ca. 3000 BC (Tsang 2004).

The very opposite may be what actually happened in many cases. Across the Fertile Crescent, agriculture was adopted by ethnolinguistically unrelated populations, and agriculture spread effortlessly across ethnolinguistic boundaries without disrupting them in any significant way. Sumerian pictographic script, developed ca. 3200 BC, appeared millennia after the invention of agriculture. Sumerian, Elamite, Akkadian,[6] Hurrian, Hattic and other contemporaneous agricultural civilisations were in all likelihood not the first cultivators of the region. Yet even these antique agricultural language communities have left no surviving linguistic descendants. The earliest recorded and reconstructible history of the Near East bears witness to the permeability of linguistic boundaries for the dissemination of agriculture and crops.

The Bronze Age of Asia Minor and Mesopotamia is characterised by a long period of incursive population movements into, rather than out of Anatolia and the Fertile Crescent, lured by the relative affluence of urban centres supported by agricultural surplus. Gutæans, Amorites, Kassites and other peoples were drawn in by the promise of the good life. Most linguistic reconstructions presume that Indo-European groups such as the Hittites and Mitanni likewise came to settle in Asia Minor and the Fertile Crescent from elsewhere. Toponymical evidence and details about the cults of certain deities have been used to argue that even the Sumerians originally migrated from an earlier northern homeland to lower Mesopotamia. Were the motivations of migrating peoples in agricultural and pre-agricultural societies and the complexity of their movements genuinely different and more monolithic at the Neolithic horizon than at later times in prehistory?

Tidings of technologically advanced urban societies may in the course of prehistory have provided ample motivation for migration, with enticing prospects of plunder and material advancement. We must consider such alternatives especially in those cases where the linguistic picture suggests a radically different view of prehistory than does the spread of material culture as reflected in the known archaeological record. The introduction of Proto-Sinitic, a branch of Tibeto-Burman, into the Yellow River basin is a case in point. This theory, which I shall call the Centripetal Migration model, is diametrically opposed to the centrifugal Farming-Language Dispersal theory. The Centripetal Migration model may also apply to portions of Austroasiatic prehistory.

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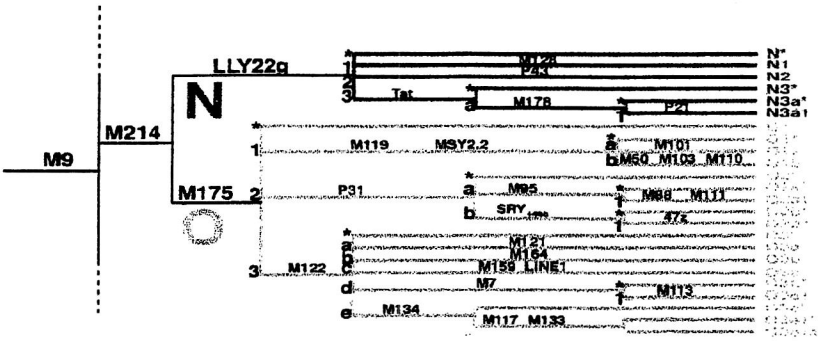
[6] Today Afroasiatic languages are spoken throughout this area, but none are descended directly from the extinct branch which Akkadian represents.

More crucially, an essential trait of the Centripetal Migration theory is that this model assumes that migrations in prehistory could have unfolded both in centrifugal and centripetal directions with respect to centres of technologically advanced and later urban civilisations. The motives for migrations were no doubt diverse, and no single model, such as the Farming-Language Dispersal theory, can account for all demographic developments and linguistic intrusions, even across the Neolithic horizon. Even the chief proponents of the Farming-Language Dispersal theory do not entertain the idea that all languages were spread by early farmers, e.g. Bellwood (2005). At the same time, we must also not lose sight of the fact that vast tracts of the Himalayas, Burma, northeastern India and neighbouring southwestern China remain archaeologically under-explored or unexplored.i

DIAGRAM 7: The portion of the Y chromosome phylogenetic tree relevant to the Father Tongue hypothesis with regard to Austroasiatic, provided by Mark Jobling and Emma Parkin.



In conclusion, groundbreaking research in population genetics has begun to suggest that the geographical distribution of Austroasiatic may be connected to a well-defined Y chromosomal haplogroup. The Father Tongue hypothesis may also apply to Austroasiatic, either wholly or in part, on the basis of the population genetic studies completed to date. The veracity of the Father Tongue hypothesis is the inherent underlying assumption when geneticists propose that a particular Y haplogroup, say O2a, corresponds to the geographical spread of a particular language family, such as Austro-

asiatic. Diagram 7 illustrates the portion of the Y chromosomal phylogeny thought to be relevant to Austroasiatic.

However, Austroasiatic is an old language family, and we would expect the population history of this family to be at least as complex as that of Tibeto-Burman, if not more so. Careful correlation of linguistic and population genetic findings may enable us to reconstruct early language contact situations and ancient cases of language shift and linguistic intrusions that might account for the phenotypical difference between Munda speakers and Khasi-Khmuic and Mon-Khmer language communities as well as between the Aslian negrito populations, Aslian non-negrito populations and the Nicobarese. The Father Tongue hypothesis may not apply in all cases for the biological ancestry of all Austroasiatic language communities, just as language spreading solely via the paternal line cannot account for the linguistic identity of all Tibeto-Burman populations, e.g. maternal Balti vs. paternal Hàn.

Although Sahoo *et al.* (2006) clearly favour a Southeast Asian homeland for Austroasiatic, their findings cannot yet conclusively establish that Southeast Asia is the point of origin for the O2a haplogroup. The exciting hypothesis that the O2a haplogroup may correlate with linguistic spread of Austroasiatic also remains to be demonstrated in convincing detail. A fine-mesh genetic sampling of all Austroasiatic populations — not just the most populous, national majority or prestige groups — will be required and the topology of the haplogroups in question will have to be determined in order to ascertain which precise area could be the probable point of origin of polymorphic genomic markers which could be correlated with the linguistic spread of Austroasiatic. Furthermore, the detailed geography of the entire O branch of Y chromosomal haplogroups has yet to be reconstructed at a satisfactorily high resolution. I call upon all interested parties to join forces and help us in this endeavour.

4. TIBETO-BURMAN: LINGUISTIC AND BIOLOGICAL ANCESTORS

What do genetic studies tell us about the spread of Tibeto-Burman? Pioneering work in the 1990s found the genetic distance between Mandarin speakers in the north and Tibetans to be far less than between southern Hàn Chinese and Mandarin speakers (Cavalli-Sforza, Menozzi and Piazza 1994: 225), even though southern Hàn populations such as the Cantonese and Mĭn speak Sinitic languages. The genetic discrepancy between southern Hàn and northern Hàn then already appeared to corroborate what we knew about the

history of China, particularly with respect to Hàn linguistic and cultural expansion.

The Qín launched a brutal campaign to subdue the 'one Hundred 越 Yuè' tribes of southern China in 221 BC, but resistance by indigenous population groups persisted fiercely, and Qín control over these areas was lost after the death of the first Qín emperor in 210 BC. The Hàn dynasties were able to consolidate Qín territorial gains and even expand further. In the south, the newly consolidated Sinitic state underwent territorial expansion into the eastern half of Yúnnán overthrowing the 滇 Diān kingdom in 109 BC, then subduing the region of 嶺南 Lǐngnán in 111-112 BC, an area comprising modern Guǎngxī and Guǎngdōng provinces, Hǎinán island and what today is northern Vietnam. Mountainous Fújiàn only became sinified much later, during the period of the Three Kingdoms in the aftermath of the Wú state's invasion of the southeast ca. 260 AD.

More recently, a population genetic study of 23 Hàn populations (Wen *et al.* 2004a) has further corroborated the picture which linguists and historians had of a martial and therefore male-biased Hàn expansion southward during the sinification of what today is southern China. Southern and northern Hàn populations were found to share roughly the same mean frequency of around 54% for the Y chromosomal haplogroups O3-M122 and O3e-M134, both characterised by the M122-C mutation. On the other hand, southern Hàn were found to have a higher frequency than northern Hàn, viz. 19% vs. 5%, for the mutation M119-C, characterising Y chromosomal haplogroups O1* and O1b, and the mutation M95-T, typifying haplogroups O2a* and O2a1. These haplogroups are known to be frequent in Daic, Austroasiatic and Hmong-Mien populations south of the Yangtze.

Moroever, southern Hàn were found to have an average frequency of 4% for the haplogroups O1b-M110, O2a1-M88 and O3d-M7, likewise frequent in pre-Sinitic populations south of the Yangtze, whereas these haplogroups were not found in northern Hàn. By contrast, the maternal lineages of southern Hàn showed an overall frequency of 36% for the mitochondrial haplotypes A, C, D, G, M8a, Y and Z, typically widespread in northern East Asia, as opposed to an overall frequency of 55% in northern Hàn. Mitochondrial lineages predominant in Daic, Austroasiatic and Hmong-Mien populations south of the Yangtze, i.e. haplotypes B, F, R9a, R9b and N9a, were found in a frequency of 55% in southern Hàn as opposed to 33% in northern Hàn.

In short, the southern Hàn paternal lineage shows preponderant northern Hàn penetration alongside a faint pre-Sinitic signature. Males from the north were the primary contributor to the paternal gene pool of southern Hàn populations, whereas the mitochondrial DNA of southern Hàn populations con-

tains roughly equal contributions from pre-Sinitic and Hàn maternal ancestors. The Father Tongue hypothesis appears to apply for Sinitic in the form of the Hàn demic expansion, at least on the basis of population genetic studies completed to date. Although there must be numerous contrary cases such as the Tibetan mother tongues of Baltistan, as a general principle the Father tongue hypothesis may at many times and in many places in prehistory have been an important mechanism in language shift.

The dynamics of a process whereby mothers passed on the language of their spouses to their offspring has major implications for our understanding of language change. If the language shift giving rise to the Sinitic languages and perhaps also the eastward spread of Indo-Aryan speech across northern India took place in this way, then could languages in some cases in the long course of prehistory have begun as languages belonging to another phylum until they reached the stage currently attained by Michif?

In origin at least, Michif is genetically an Alqonquian language that was spoken by women who relexified the language with the French spoken by their husbands to such an extent that the genetic affinity has nearly been obscured (Bakker 1992, 1994, van Driem 2001: 169-173). If the process of relexification were to continue beyond the stage attained by Michif, then a language could conceivably change its genetic affinity even though the dynamics of the process would introduce a discontinuity with its past. Can such a process ever be reconstructed linguistically? A recent study of Chinese dialects indicates that the diversification of Sinitic languages did not proceed in a tree-like fashion (ben Hamed and Wāng 2006).

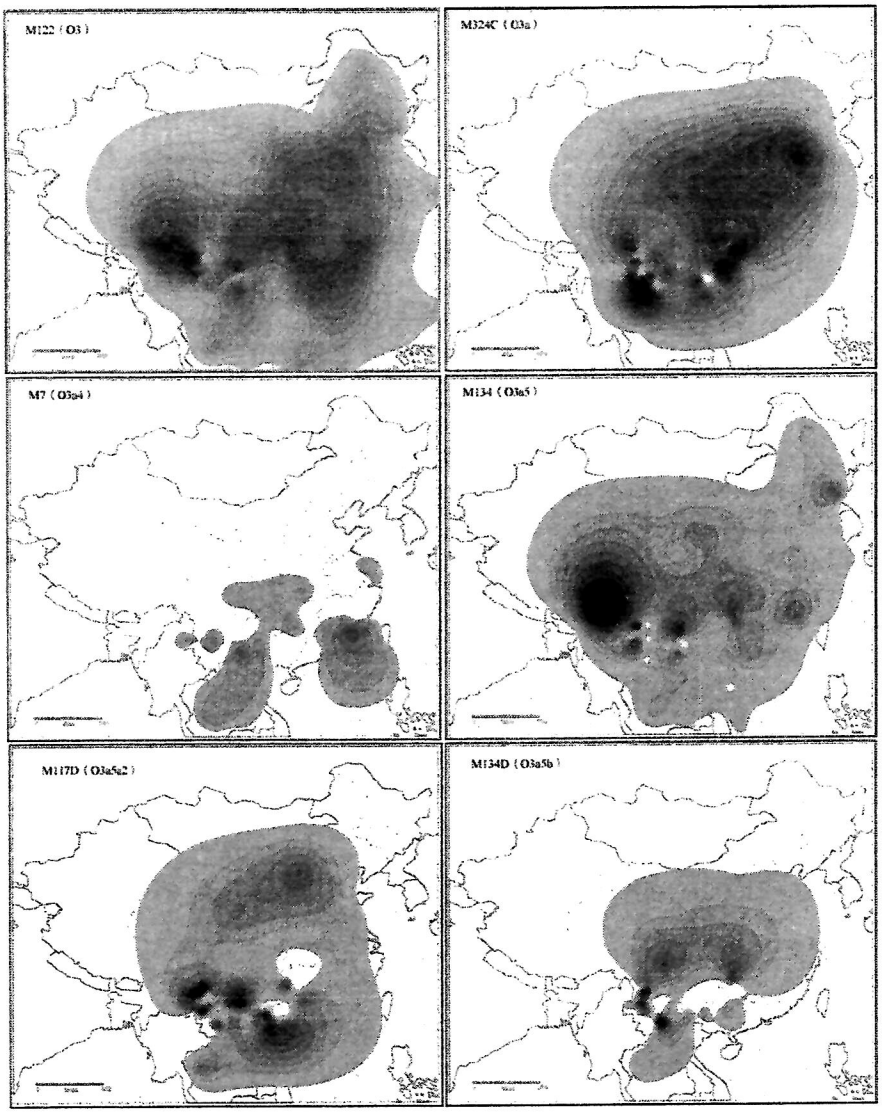
At a deeper time depth, what can we say about the origin of the Sinitic branch as such? Genes do not tell us which linguistic intrusions took place in prehistory. For this linguistic georgraphy is a better indicator. Population genetics tells us about the spread of genotypes, whether this is caused by circumstances of origin, migration or natural selection. Geneticist have looked for markers which identify Hungarians as a Uralic language community and failed to come up with much. Even the Y chomosomal haplogroup N-TatC (N43), which is found at a high frequency throughout all Uralic language communities, does not seem to be prevalent in Hungary. Outside of Uralic speech communities, the haplogroup is also found at a high frequency amongst the Yakut, Even and Tuva.

Rather, Hungarians look genetically quite a lot like a Western Slavic language community, and there is very little trace at the moment of a Uralic genetic signature (Tambets *et al.* 2001). Perhaps the early Magyars who penetrated Pannonia introduced a Uralic language but not much else. Perhaps Uralic Y chromosome lineages died out in Hungary for some reason.

Whatever the case may be, the Hungarian language constitutes incontrovertible linguistic evidence that the Magyars did come to Pannonia. The historically attested Magyar linguistic intrusion may be genetically invisible, but the Hungarian language is linguistically palpably manifest. Given the extremely low population numbers which characterised prehistoric human demography, it stands to reason that no colossal throng of people was needed to effectuate a linguistic incursion.

By the same token, let us keep in mind that the linguistic ancestors of the Chinese were Tibeto-Burman, but there is no *a priori* reason for assuming that the biological ancestors of the Hàn Chinese derived predominantly from ancient Tibeto-Burman speech communities. Earlier studies have been interpreted to indicate movements in all directions. However, work by our own team on the Y chromosome indicates that the linguistic ancestors of the Hàn Chinese and at least some portion of Hàn biological ancestry in the paternal line were the same people. Moreover, genetic studies do not reveal a simple picture of our past, but a multi-layered pattern of movements in different directions at different time depths, and sometimes these migrations are characterised by a certain sexual dimorphism or gender bias, whereby women quite often get left at home.

DIAGRAM 8 next page: Contour maps showing the geographical distribution of Y haplotype frequency, reproduced here from Shi (2005: 414), based on assays which were not yet able to include most Tibeto-Burman language communities. Haplogroup labels in their diagrams deviate from the conventional 2003 and 2005 nomenclatures of the Y Chromosome Consortium. What is called 'M7 (O3a4)' here is haplogroup M7 (O3d) in the 2003 Y Chromosome Consortium nomenclature or M7 (O3c) in the as of yet insufficiently verified 2005 Y Chromosome Consortium tree. What in this diagram is labelled as haplogroup 'M134 (O3a5)' is haplogroup M134 (O3e) in the nomenclature of the 2003 Y chromosome tree with its smaller and more reliably documented set of single nucleotide polymorphisms, or M134 (O3d) in 2005 Y Chromosome Consortium nomenclature. Both 'M117D (O3a5a2)' and 'M134D (O3a5b)' are subgroups of haplogroup M134 (O3e) or, in 2005 nomenclature, of haplogroup M134 (O3d). What in this diagram is labelled as 'M122 (O3)' is indeed M122 (O3), and the mutation 'M324 (O3a)' is purported to be a single nucleotide polymorphism (SNP) that characterises all lineages derived from M122 (O3), i.e. O3a through O3e (or O3a through O3d), except O3*.


M122 (O3)
M324C (O3a)
M7 (O3a4)
M134 (O3a5)
M117D (O3a5a2)
M134D (O3a5b)

The reduced polymorphism of northern populations of East Asia, which represent a subset of the haplotypes found in southern populations, was taken to reflect the peopling of the north after the Ice Age (Sù *et al.* 1999), whereas the extremely high frequency of H8, a haplotype derived from M122C, was seen as reflecting a genetic bottleneck effect that occurred during an ancient southwesterly migration about 10,000 years ago, suggesting a demic diffusion at the outset of the Neolithic (Sù *et al.* 2000, Ding *et al.* 2000, Shi *et al.* 2005). Another study suggested that Hàn Chinese did not originate in the Yellow River basin but had more recently migrated to this area from southwestern China (Chǔ *et al.* 1998). Comparison of haplogroup frequencies exhibited by Tibetans vs. Tǔjiā, Bái and Lolo-Burmese groups showed all Tibeto-Burman groups to have a high frequency of the Y-chromosomal haplogroups O3e and O3*, with the average hovering approximately around 40%. The findings were interpreted as supporting a slightly male-biased infiltration from the Bodish area in Amdo into Yúnnán and Húnán about two and a half millennia ago, though 'the less drastic bias between male and female lineages' suggested that these putative southward migrations 'likely occurred with the involvement of both sexes rather than as conquests involving expedition forces primarily consisting of male soldiers' (Wen *et al.* 2004b).

These pioneering genetic studies are highly insightful, but they are limited by the fact that most Tibeto-Burman language communities and even most branches of the language family are exclusively represented outside of China. The picture of the Tibeto-Burman past has been rendered far more complete by findings of our research team, which has conducted the most extensive sampling of Tibeto-Burman populations in the Himalayan region (Kraaijenbrink *et al.* 2006a, 2006b, Parkin *et al.* 2006a, 2006b, Tyler-Smith *et al.* 2006).[7] Tibeto-Burman language communities in northeasten India

[7] Our findings are not contradicted by other recent genetic studies on populations of East and Central Asia (Hu *et al.* 2005a, Hu *et al.* 2005b, Hu *et al.* 2005c, Hu *et al.* 2005d, Liang *et al.* 2005, Lin *et al.* 2005, Xue *et al.* 2005, Yang *et al.* 2005, Zhu *et al.* 2005, Chen *et al.* 2006, Kang and Li 2006, Shi *et al.* 2006, Zhang *et al.* 2006) or relevant portions of the Indian subcontinent (Ashma and Kashyap 2002, Sahoo and Kashyap 2002, Kashyap *et al.* 2002a, Kashyap *et al.* 2002b, Maity *et al.* 2003, Kumar *et al.* 2004, Langstieh *et al.* 2004, Thomas *et al.* 2004, Banerjee *et al.* 2005a, Banerjee *et al.* 2005b, Debnath and Chaudhuri 2005, Krithika *et al.* 2005, Watkins *et al.* 2005, Singh *et al.* 2006). DNA testing on probably Tibeto-Burman mummies in the Kālī Gaṇḍakī valley has yet to test for the relevant markers (Alt *et al.* 2003).

and southwestern China have yet to sampled in as rigorous and fine-mesh a fashion as has been done in Nepal and Bhutan.

If we were to assume the veracity of the Father Tongue hypothesis for Tibeto-Burman in general with the exception of cases such as Baltistan, then our team has identified a Y-chromosomal haplogroup that may be specifically correlated to the early spread of Tibeto-Burman language communities. Frequency gradient maps for the relevant haplogroup would be somewhat indicative of a possible location for the Tibeto-Burman homeland. More instructive, however, would be the identification of a precise geographical locus, if one can be said to exist, for the root of the topology of the relevant haplogroup. Our results will be published in due course in an appropriate population genetics journal, and I am not at liberty to detail the findings here. However, suffice it to say that one highly plausible interpretation of these findings would be commensurate with one of the scenarios outlined in the following section of this paper.

Far away to the south, in the Brahmaputran basin and the Indo-Burmese borderlands, however, some of the spread of Tibeto-Burman may have been at the expense of indigenous Austroasiatic populations who were assimilated linguistically. The Y haplogroup O2a is represented at a frequency of 77% in Austroasiatic groups in India and 47% in Tibeto-Burman groups of northeastern India (Sahoo *et al.* 2006). This patterning could suggest that Tibeto-Burman paternal lineages may have partially replaced indigenous Austroasiatic lineages in the northeast of the Indian Subcontinent and that Austroasiatic populations preceded the Tibeto-Burmans in this area, as linguists and ethnographers have speculated for over a century and a half.

5. TIBETO-BURMAN: LINGUISTIC ANCESTORS AND MATERIAL CULTURE

Linguistic palaeontology has begun to suggest that the early speakers of Tibeto-Burman languages, or a subset thereof, were already agriculturalists as well as hunters. On the other hand, the Limbu, Lohorung, Dumi and other Kiranti groups in the eastern Himalayas retain lore whereby their ancestors once only practised hunting and gathering and then one day became cultivators. The transition to a sedentary agricultural lifestyle no doubt occurred in the hoary past, yet the memory of this episode is kept alive as if it were a recent historical event. Could the Kiranti ancestors have been farmers who were forced by circumstances at some point to revert to a hunter-gatherer existence, only for their descendants in some later period to return to sedentary agriculturalism? The antiquity of oral traditions is difficult to ascertain, yet millets must have played a key role in Tibeto-Burman culture for a long

time, as attested by reflexes for *Setaria italica* in languages as far flung as Old Chinese 稷 ^{b}tsïk in the Yellow River basin and Lhokpu *cǎ$^{?}$kto* 'foxtail millet' in modern southwestern Bhutan.[8]

Both foxtail millet *Setaria italica* and broomcorn millet *Panicum miliaceum* and were staples in what today is northern China, where they are first found to occur in the Péilígǎng culture (6200-5000 BC). No archaeological sequence provides evidence for their prior domestication, and neither northern China nor Korea have yet yielded any archaeological data on subsistence for the period between 10000 and 6500 BC (Crawford 2006: 80-81, 91), even though by far 'most archaeological fieldwork has taken place in the eastern half of China' (Underhill and Habu 2006). Domesticated foxtail millet derives from green foxtail millet, i.e. *Setaria italica*, subsp. *viridis*. Broomcorn millet is known to grow throughout Eurasia as a weed, and the wild form has been denominated subspecies *ruderale*. The early Neolithic in northern China is therefore in effect defined by the appearance of ceramic communities, although the appearance of ceramic communities in Korea and Japan are conventionally not interpreted as representing agricultural communities (Underhill and Habu 2006).

For Kiranti groups of eastern Nepal no sacred ritual can be preformed without millet beer and distilled millet spirits. This applies particularly to ceremonies to commemorate and revere the ancestors, at which millet beer and millet brandy are indispensable. In Nepal, *Setaria* and *Panicum* have in many areas been replaced with finger millet *Eleusine coracana*, a crop ultimately of African provenance. Yet in parts of Nepal as well as in Bhutan, *Panicum*, *Setaria* and other millets are still widely cultivated, though these crops are on the decline due to our headlong global rush towards 'improved' monocultures. Amongst the Gongduk community in Bhutan, for example, broomcorn and foxtail millet are prized as the staples sacred to the tribal ancestors.

In the Himalayas, groups which have undergone either strong Aryan religious and Hindu cultural influence or the influence of Buddhism emanating from the Tibetan plateau preserve less faithfully the Tibeto-Burman cultural

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[8] The Lhokpu are an inbred and genetically highly distinct group within the Himalayan region as a whole (Kraaijenbrink *et al.* 2006a, Parkin *et al.* 2006a). The impact of matrilocality and cross-cousin endogamy is clearly discernible in the genetic signature of this language community. Many of the ancient Tibeto-Burman groups may have been matrilineal, matrilocal societies with uxorilocal marriage such as the modern Lhokpu and Gongduk of Bhutan.

heritage retained amongst groups like the Kiranti in eastern Nepal and the Gongduk of eastern Bhutan. Wherever the older stratum of shamanism and sacrifice has been retained, the role of millet beer and millet brandy takes centre stage. I cannot help but look with Kiranti eyes at the plethora of elaborate bronze ritual vessels for beer and distilled spirits which appear in the Shāng and Zhōu period. These diverse ornate liquor vessels have been labelled by archaeologists variously as 觚 *gú* 'beaker', 壺 *hú* 'liquor vessel', 尊 *zūn* 'liquor vessel', 觶 *zhì* 'goblet', 觥 *gōng* 'animal-shaped liquor receptacle', 杯 bēi 'beer bowl', 卣 *yǒu* 'spiced millet liquor vessel', 斚 *jiǎ* 'vessel for libations in honour of the ancestors', 盉 *hé* 'vessel for mixing liquor', 彝 *yí* 'large liquor container', 罍 *lěi* 'liquor receptacle', 罐 *líng* 'liquor receptacle, modified from the lěi', 角 *jué* 'decanter'and 爵 *jué* 'decanter'. These receptacles were used for storing, blending, serving beer and spirits brewed from the millets *Setaria* and *Panicum*, sacred to the ancestors of the Kiranti, the Gongduk and the Chinese.

So, were broomcorn millet and foxtail millet first cultivated in what today is northern China, where evidence of their domestication appears as early as 6200 BC, or were they first domesticated somewhere in the expanse of territory between Shǎnxī and the eastern Himalayas, where these crops are still cultivated by indigenous Tibeto-Burman peoples today? Are the Lhokpu descendants of early agricultural colonists from the Yellow River basin who forged their way across the Tibetan plateau, over the towering Himalayas and down its southern flanks into the dense malarious jungles on the western duars in search of arable land? Or did the linguistic ancestors of the ancient Chinese migrate up from the jungles of the Brahmaputran plain across the white peaks of the Himalayas to make a long trek to what is now the North China plain in search of fertile fluvial plains far away?

Before we cast our inquiry in such a mould, we must ask what the first domestication of crops can tell us about the spread of language families. The Neolithic spans a vast stretch of time, and this long period was no doubt not characterised by demographic stasis. The linguistically reconstructible past has a shallower time depth than the prehistory of human habitation in the region. Ancient humans inhabited at least the foothills of the Himalayas,[9]

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[9] The Himalayas are the most prominent barrier along the Movius line, beyond which *Homo erectus* populations colonising eastern Asia either lost or abandoned their advanced Acheulian stone knapping technologies. Based on an archaeological survey in Dāṅg Deukhurī in western Nepal and in the foothills of the eastern Terai along the Rāto Kholā, Corvinus concluded that palaeolithic 'sites are rare and that hand-axe makers were not frequent

and anatomically modern humans later inhabited even the Tibetan plateau in palaeolithic times (Zhang *et al.* 2003, Madsen *et al.* 2006). Yet the palaeolithic of the Himalayan region, including the Tibetan plateau, remains largely unexplored and unknown. As for the early Neolithic inhabitants, the very first cultivators may not have left any linguistic descendants at all. This point was made clear for the Bronze Age Near East in the previous section.

There is no reason to think that prehistoric events did not transpire in a parallel fashion in the Yellow River basin. A reasoned correlation of the archaeological record with the reconstructible linguistic past and the complex picture emerging from population genetic studies may help us reconstruct some of what actually happened. Archaeology, comparative linguistics and population genetics give us three different versions of prehistory, and in the handbook (van Driem 2001), I argued for keeping these three different versions of prehistory distinct. In a similar vein, Karafet *et al.* (2001) argue for a 'multilayered, multidirectional and multidisciplinary framework' and insist that 'more realistic models for the underlying processes leading to the modern population structure of East Asia will have to accommodate more complex multidirectional biological and — *especially* — cultural influences than earlier explanatory paradigms' (2001: 626).

Cultural traits, crops and the names for crops could have come along with a community of speakers but are also known to diffuse back and forth across language boundaries or to be adopted by newcomers to an area from an older resident population. So this view varies fundamentally from a programme that seeks to see genes and languages spreading monolithically in tandem with Neolithic agriculture as attested in the archaeological record. What archaeology tells us is the prehistory of material culture, which may often be a reflection not of population movements but of socioeconomic discrepancies which drove ancient peoples to migrate towards the centres of affluence which lured them with the promise of a better life. The distribution of major Tibeto-Burman subgroups mapped in Diagram 3 suggests the tracks of a northeasterly migration from the Tibeto-Burman core area in the fertile hills and river valleys of Sìchuān and the eastern Himalayas to the

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occupants of the valleys' (1996: 48), corroborating Pandey's earlier survey (1987). Gaillard reported that Acheulian industries are rare throughout the Śivālik hills north of the Gangetic basin (1996). Yet Acheulian bifacials have been found at Chinese sites as far flung as Lántián, Bósè, Zhōukǒudiàn and Dīngcūn, which underscores that the Movius line was a permeable barrier. It is possible that stone tools were largely replaced by tools of bamboo, rattan or some other more perishable material to the east of the Movius line.

loess plains of northern China by an ancient group that was linguistically ancestral to the Chinese.

Different scenarios have been proposed to account for the modern geographical distribution of Tibeto-Burman language communities. Here I shall discuss three such possible versions of prehistory, which may be numbered Scenario 1, 2 and 3. Scenario 2 exists in several versions, which we may call Scenario 2a , 2b and 2c. Over the past years, I have argued the case for Scenarios 1, 2b and 2c. Scenario 2a was first implied by Paul Benedict, and Scenario 3 is a model of population prehistory proposed for Tibeto-Burman by Peter Bellwood.

Scenario 1 envisages Proto-Tibeto-Burman originating in what today is Sìchuān province, whence early Tibeto-Burmans spread to the southwest onto the Brahmaputran plain, introducing themselves and the Eastern Indian Neolithic culture to resident Austroasiatic populations. Another group, which we might call Proto-Sino-Bodic, moved to the northeast seeding the Péilígǎng (6500-5800 BC), Císhān (6000-5600 BC) and Dàdìwān (6500 to 5200 BC) Neolithic cultures along the Yellow River. Other groups remained in Sìchuān and spread across the fertile hills of Yúnnán province in the south. The Mǎjiāyáo Neolithic (3900-1700 BC) succeeded the Dàdìwān culture in eastern Gānsù and adjacent parts of Qīnghǎi and Níngxià. Sinitic remained in the east and can be associated with the Yǎngsháo culture (5500-2700 BC), which succeeded the Péilígǎng and Císhān cultures on the North China plain, whereas the expansion of Bodic into the Himalayas is associated with the sudden appearance of colonial exponents of the Mǎjiāyáo Neolithic in eastern Tibet at mKhar-ro and in Kashmir at Burzahom at the same time that the core area in Gānsù shrank during a period of climate change between the Mǎjiāyáo phase (2700-2300 BC) and the Bànshān phase (2200-1900 BC) of the Mǎjiāyáo sequence. This, in a nutshell, is the scenario which I outlined in several previous publications (van Driem 1998, 2001, 2002). [10]

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[10] In their archaeological discussion of the Sìchuān homeland hypotheses, Aldenderfer and Zhāng 'agree with van Driem that Sichuan is a likely source for a Neolithic package' which gave rise to cultures on the Yellow River (2004: 39). Yet Aldenderfer and Zhāng (2004: 37) appear to think that I do not include the mKhar-ro site near Chab-mdo or any other Tibetan archaeological sites in my model. The Tibetan archaeological site mKhar-ro or mKhar-chu, which I discuss at length (van Driem 2001: 430-431), is sinicised in the Chinese archaeological literature with characters that are correctly romanised as Kǎruò, and which Aldenderfer and Zhāng incorrectly transcribe as 'Karou'. Sites should be named properly in accordance with archaeological convention. Their misunderstanding again provides

Scenario 2, discussed as an alternative proposal in the same publications, plays out at an utterly different time depth. This alternative view does not see the ancient Tibeto-Burmans as the people who seeded the early Neolithic cultures seen at the Péilígǎng, Císhān and Dàdìwān sites. Rather, the ancient Tibeto-Burmans emerged from the linguistic core area, drawn by the riches of the affluent Yellow River basin and introduced themselves and their language only in the late Neolithic or Bronze Age. The point of departure in this scenario again is Sìchuān.

The version of this model which we shall call Scenario 2a develops a proposal first put forward by Benedict that the Shāng may not yet have been Sinitic at all. Instead, the Zhōu, who came from the west, were the bearers of the Proto-Sinitic language who 'became fused with, or perhaps immersed in' the pre-Tibeto-Burman language spoken by the Shāng (1972: 197). My own variations on this theme are Scenario 2b, which envisages that the prosperous agricultural civilisation in the Yellow River basin may have lured the linguistic forebears of Sinitic, or perhaps even Sino-Bodic, before the Shāng period, and alternatively Scenario 2c, whereby Tibeto-Burman could have been introduced or re-introduced to the Yellow River basin more than once in the course of prehistory. Each version of Scenario 2 presumed that tidings of the technologically advanced societies already in place throughout the Yellow River basin would have provided ample motivation for the move, with enticing prospects of plunder, riches and material advancement.

There are possible archaeological correlates for the Bronze Age linguistic intrusion proposed by Scenario 2. As compared to eastern China, the vast southwestern region has not received nearly as much attention from archaeologists. Fortunately, some progress has been made since Zhāng Guāngzhí (1977, 1986) lamented the lack of fieldwork in Sìchuān. At the same time,

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the context for my assertion that: 'Numerous artificial problems in Tibetan toponymy and cartography currently result from the practice of listing only the sinified version of Tibetan place names in Hànyǔ Pīnyīn romanisation without providing the actual place names' (loc. cit.). Incorrect Hànyǔ Pīnyīn transcriptions merely exacerbate the problem. Aldenderfer and Zhāng identify mKhar-ro or Kǎruò as a colonial exponent of the Mǎjiāyáo Neolithic in Gānsu, but their cursory familiarity with the literature leads them to think that they are the first to do so. In fact, a good number of Chinese archaeologists (e.g. Xīzàng etc. 1979, Ān 1992) had already identified mKhar-ro or Kǎruò as a colonial exponent of the Mǎjiāyáo Neolithic, and my model followed this consensus. Aldenderfer and Zhāng do not differentiate between language spread by demic diffusion and language intrusion by colonial migration, and they inexplicably attempt to interpret 'Karou' as the result of demic diffusion from Sìchuān.

the grand scale on which the earth is being ripped apart in many parts of Sìchuān, including even the Mínjiāng river valley, for highway networks, dams and large industrial projects may already have obliterated a great deal of potential archaeological sites, especially along rivers and at many of the best sites for ancient human habitation. When archaeological fieldwork *is* conducted in the region, excavations unearth spectacular new sites such as the major but previously unknown Bronze Age civilisation at Sānxīngduī, which only fully came to light in 1986, and the discovery in recent years of the earlier Neolithic civilisation along the precipitous upper reaches of the Mínjiāng river, a tributary of the Yangtze. In 茂縣 Màoxiàn county, the 波西 Bōxī (4000 BC), 營盤山 Yíngpánshān (3500-3000 BC) and 沙烏都 Shāwūdū cultures (2500 BC), situated on the largest pieces of fertile flat land along the Mínjiāng river, on the way from Chéngdū to gZi-rtsa-sde-dgu,[11] have been identified as possible antecedents of the Sānxīngduī culture, located 40 km northeast of Chéngdū.

Sānxīngduī has been associated with the ancient 蜀 Shǔ polity. In terms of chronology, the earliest period of habitation, Period I, is the 寶墩 Bǎodūn phase, which lasted from 2800 to 2000 BC and is contemporary with the Shāwūdū culture upstream in the Mínjiāng river valley. The spectacular Bronze Age culture at Sānxīngduī is represented by Periods II and III, which together lasted from 2000 to 1200 BC. The apogee of the Sānxīngduī culture is therefore contemporaneous with and somewhat precedes the Shāng period (1700-1100 BC) at Ānyáng. The later 巴蜀 Bāshǔ period (1200-800 BC) at Sānxīngduī is contemporary with the Western Zhōu (1100-771 BC) centred at Hào near Xī'ān. Dragons and physiognomic motifs on some of the bronze 鐃 *náo* 'ritual bells' and 盤 *pán* 'basins, dishes' of the late Shāng period at Ānyáng are in fact stylistically reminiscent of earlier Sānxīngduī iconography in Sìchuān.

The striking imagery of the Sānxīngduī culture has led archaeologists to speculate that the society was theocratic in nature, with sacrifice playing a central role. Brewing beer and distilling alcohol were evidently of pivotal cultural importance. In addition to elaborate bronze cooking vessels, musical instruments and a variety of water containers, the Sānxīngduī people also had a variegated repertoire of ritual vessels for beer and distilled spirits just like those of the Shāng and Zhōu further east. Archaeological speculation about the ritual importance of alcohol and of blood sacrifice to haunting

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[11] gZi-rtsa-sde-dgu [zətsazdergə] is the local place name. The official Tibetan name is gYu-tsha-sde-gu [ɣ jətsʰazdergə], and the Mandarin name is Jiǔzhàigōu.

goblin-like deities is reminiscent of the ritual importance of alcohol in many Tibeto-Burman cultures and of the blood sacrifice practised by the Kiranti and other Himalayan groups, which in olden days even entailed human sacrifice, as recorded in the Dumi grammar.

Sānxīngduī has yielded numerous ornate bronze ornaments and tools, but far more daunting is the vast arsenal of well honed jade weaponry, such as 璋 zhāng 'axes' and 戈 gē 'dagger axes', adzes, blades, swords and spear points in addition to numerous jade chisels and other lithic tools. Rather than a peaceful demic diffusion, the expansion of Tibeto-Burman into Shǎnxī may very well have been a military affair. The martial campaigns which heralded the Tibeto-Burman linguistic intrusion into northeastern China may have left no more testimony in the archaeological record than did the successive invasions of Gutæans, Amorites and Kassites into the Fertile Crescent. Rather the principal, telling legacy of this intrusion today is the Sinitic branch of languages. As Máo's Red Army demonstrated in 1935-36, the rugged mountain strongholds of Sìchuān and the eastern perimeter of the Tibetan plateau are a strategic area from which to launch a military campaign into Shǎnxī. In their case, however, this area also served as a place of refuge for which many troops were ill prepared, with fatal consequences.

Even if Sinitic were only introduced to Shǎnxī as late as the Zhōu period, as Benedict proposed, then the turbulent maelstrom of cultural changes and military conflicts which have characterised Hàn expansion from the second century BC to the present day as well as the succession of distinct prestige vernaculars emanating from shifting capitals in the course of over two millennia are more than adequate to account for the aberrant appearance of modern Chinese dialects when compared to reconstructible Old Chinese. A language spoken in the thick of things incurs change more rapidly than languages sheltering in the undisturbed periphery. Once an ancient variety of Tibeto-Burman speech had been introduced into the political centre of what was to remain the most powerful polity in East Asia, the language would change more quickly than those varieties of Tibeto-Burman spoken in less easily traversable terrain.

Benedict's and my versions of Scenario 2 have different implications for the nature of the Shāng script. For Benedict, the Shāng spoke a pre-Sinitic language, whilst my versions, 2b an 2c, do not exclude the possibility that the Shāng script might already represent an early Sinitic language. In favour of Benedict's view, it can be pointed out that only half of the nearly five thousand Shāng period characters have been deciphered with certainty, and the extant corpus consists entirely of highly abbreviated divinatory fragments. No critical study has been undertaken to ascertain precisely what per-

centage of Shāng characters consist of a phonetic and a semantic component, and how the phonetic components in composite Shāng characters compare with those in Zhōu characters with the aim of testing the hypothesis of a possible language shift between the two periods, whereby the script was adopted by an early Sinitic population from a non-Sinitic one. Indeed, undertaking any such study of the Shāng character corpus with the aim of assessing this hypothesis dispassionately would already be flying in the face of orthodoxy.

Tangential to Benedict's hypothesis is the question of the origin of the Shāng script itself. Nativists such as Keightley oppose the idea of a foreign inspiration for the earliest Sinitic script because of the lack of similarity between Shāng oracle bone inscriptions and 'Sumerian, Egyptian or Hittite' writing (2006: 177). Few would take issue with the lack of similarity between cuneiform, Egyptian hieroglyphs and the Shāng characters that appeared in the second millennium BC. However, the old theory that the Shāng writing system was inspired from a foreign model does not look to cuneiform or hieroglyphic writing, but logically looks to the two earlier writing systems that were closest to the Yellow River basin both in time and in space, i.e. the Indus and Proto-Elamite pictographic scripts.

These two logosyllabic writing systems could have travelled eastward via the same, then already ancient trade route as did contemporary Bronze Age technologies. The Indus and Proto-Elamite scripts are not only structurally similar[12] to the early Shāng writing system but also similar in terms of individual graphemes, as I have illustrated previously (2001: 355-358). Is it mere coincidence that the Western Zhōu ideograms show great resemblance to contemporaneous Late Bactrian glyphs, whilst the earlier Shāng script more closely resembles its nearest precursors, Indus and Proto-Elamite writing? Or are such differences in style and parallel developments in style to be explained away merely as a function of the difference in medium involving the transition from scapulae and plastrons to bronzes in which shapes could be carefully fashioned in the malleable clay of the moulds?

Nativists look for precursors to the Shāng script in the decorative glyphs found on local ceramics, whilst ignoring likely Central Asian antecedents.

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[12] Whilst modern Chinese writing is ideogrammatic in that it consists of characters or ideograms representing morphemes, the Shāng writing system is widely held to have been logographic, whereby each character represented a word. I shall not entertain the theory of Vandermeersch (1980) and Hansen (1993) that Shang writing was ideographic in the sense of representing ideas or things directly rather than representing language.

Followers of this line of inquiry should at least include the 巴蜀 Bāshǔ pictographs on Sānxīngduī pottery in their deliberations. Some have ventured to speculate on the erstwhile existence of texts of a more elaborate nature on perishable materials during the Shāng period, not one of which has survived. If such speculation is warranted, then how much more probable is it that specimens of Indus and Proto-Elamite writing on perishable materials could have made their way along the main eastbound trade artery to the Yellow River basin by the sixteenth century BC and inspired the writing system of the Shāng in the first place? Or could the idea of script have travelled via Sānxīngduī itself, where hoards of tusks, cowrie shells and other objects likewise attest to long-distance trade?

More fundamentally, the search for precursors of the Shāng script in the decorative motifs on pottery reminds us that semasiography, viz. communication by pictorial or symbolic representation, was already a finely developed art in the Upper Palaeolithic. Franco-Cantabrian glyphs which appeared between 60,000 and 40,000 years ago, some spectacular specimens of which are kept at the Museum of Natural History in Brussels, resemble symbolic writing systems far more than do the decorations on East Asian ceramics of the fourth and third millennium BC. Glottography, viz. visual representation of spoken language, is attested from 3200 BC in Sumer, and recent finds at Abydos by Günter Dreyer's team may now push back the date for glottography to 3400 BC and its earliest attestation west to Egypt. Subsequently a plethora of writing systems had evolved in West Asia and the eastern Mediterranean before the Shāng writing system appeared nineteen centuries later in the sixteenth century BC.

Yet even if we envisage the Shāng as speakers of some early form of Sinitic, then the linguistic ancestors of the Chinese would still very much have been relative latecomers, arriving millennia after cultivation had begun to be practised along the Yangtze and Yellow River basins. This is the key feature of Scenario 2. Recently, a study of human leukocyte antigen (HLA) diversity on the genomic region known as the major histocompatibility complex (MHC) purportedly found support for the old linguistic view 'that Altaic speakers in northern China have been switching to Chinese *en masse* in historical times' (Sanchez-Mazas *et al.* 2005: 290). At their current state of temporal resolution, these genetic findings are compatible with Benedict's version of Scenario 2, whereby Chinese arose in a process of language shift, with the Zhōu imposing the Proto-Sinitic language onto a Shāng population speaking some pre-Tibeto-Burman tongue, conceivably perhaps even some early form of Altaic. In fact, Benedict's suggestion about the origin of Sinitic gave expression to older widespread linguistic conjectures regarding the

linguistic prehistory of eastern Asia. Hashimoto's altaicisation hypothesis[13] about Mandarin originating as a Manchu-Chinese pidgin (1986) can be seen as representing an even later stage in a long-term and intermittent process, the first stage of which was envisaged by Benedict.

An alternative view, which here I have called Scenario 2b, different from the hypothesis advanced by Benedict, envisages the Tibeto-Burman linguistic intrusion onto the North China plain as having first occurred either as early as the Lóngshān horizon, during the subsequent Èrlǐtóu period, or as late as the Shāng period. The Dàwènkǒu culture of Shāndōng and the Yǎngshóu cultural assemblage were superseded by the more advanced Late Neolithic Lóngshān culture in the middle of the third millennium BC. Population size increased in the Lóngshān period (2600-1900 BC), and jade and ceramic prestige objects proliferated, especially in Shāndōng and southern Shǎnxī. The walls surrounding many Lóngshān settlements indicate an increased concern with the protection of resources, although one rammed earth wall was also already found to surround a late Yǎngshóu period settlement at Xīshān near modern Zhèngzhōu (Liu and Chen 2006, Underhill and Habu 2006).

Settlement nucleation in the subsequent 二里頭 Èrlǐtóu period, which emerges ca. 1900 BC, ostensibly during the time of the mythical Xià dynasty, has been taken to indicate increasing craft specialisation and changing patterns of resource management. The burial practices and stratiied urban architecture of the Èrlǐtóu period indicate the emergence of a more complex political infrastructure in what today is northern China. Perhaps the new Èrlǐtóu social order was established by the first incursive Tibeto-Burmans from the southwest, whereas the walls surrounding Lóngshān settlements were the fortifications which had been intended to repel them, but in vain.

Whichever scenario happens to be our favourite, what would appear to be incontestable is that the Hàn and Tibetan expansions are both historical and relatively recent, and could possibly have effaced and assimilated many Tibeto-Burman and allophylian groups in their paths. Yet even Hàn linguistic and cultural expansion appears not to have been so imperious as to have entirely swept away the Tǔjiā, Bái and diverse Lolo-Burmese, Qiāngic, Hmong-Mien and Daic language communities which remain scattered

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[13] Hashimoto wondered whether the typology of Mandarin could be explained as the result of the altaicisation of Chinese or the sinicisation of an Altaic languages, which would have involved either the 'Altaic replacement of Chinese syntax or the Chinese replacement of Altaic lexicon and morphology' (1986: 95).

throughout central and southern China. Neither did the Tibetan expansion annihilate all of the Zhangzhung literary legacy or attestations of other languages still preserved in the Dūnhuáng documents. These residual islets of retention and the now mute testimonies represent vestiges of the older situation.

The expansions of these two branches of Tibeto-Burman, viz. Bodish and Sinitic, are seen precisely in the areas of high mobility where we would expect them to have occurred, i.e. martial expansion across the vast rolling treeless and sparsely populated high alpine plateau of Tibet in the case of Bodish or across the more easily traversable East, where mountainous areas such as Fújiàn were colonised only belatedly by the Hàn. Another important feature of the model underlying each version of Scenario 2 is the temporal dimension. Although Sìchuān is treated as the point of departure for the establishment of early Sinitic in Shǎnxī or perhaps an early Sinitic intrusion even further east into Shāndōng, the ultimate homeland of Tibeto-Burman, as suggested by the diversity observed between the distinct branches of the Tibeto-Burman family, would be expected to have lain far closer to the eastern Himalayas.

Scenario 2c envisages that Tibeto-Burman could have been introduced or re-introduced to the Yellow River basin more than once in the course of prehistory. The Sinitic heartland within the eastern half of what today is China was not politically unified before the Qín dynasty in 221 BC. Rather, monarchs from the house of Zhōu ruled over a constellation of distinct polities in the Yellow River and Yangtze basins during the first millennium BC. It is conceivable that the Shāng, the Zhōu and the Qín[14] could all have spoken different early forms of Tibeto-Burman that influenced each other and ultimately led to the emergence of a Sinitic creole subsequently regularised by the Hàn. Many structural features which Sinitic languages share with young creoles are itemised by Aronoff, Meier and Sandler (2005). It is conceivable that an early migration of ancient Tibeto-Burman speakers to

[14] In the fourth century BC, the Qín were described as 夷 Yí 'barbarians', and later sources such as the 史記 *Shǐjì* 'Historical Records' written around the beginning of the first century BC described the Qín as similar to the 戎 Róng or 狄 Dí, who strove to emulate Zhōu ritual and tradition. The ethnolinguistic composition of the Qín state must have been complex, and statues distinguished between 故秦民 gù Qín mín, the native Qín population, and 客 kè and 邦客 bāng kè, foreign and subject populations (Shelach and Pines 2006: 205, 217, 220).

gart represent the residue of an early Sino-Austronesian contact situation, then even this could imply that the Proto-Tibeto-Burmans, or some major subset thereof, lived as far east as Shāndōng in the Lóngshān period.

On the other hand, it does not seem that the correspondences necessarily represent anything but a collection of coincidental resemblances, with the exception of a tantalising correspondence first identified as a loan word into Tibetan by Hendrik Kern (1889: 5), viz. Austronesian *beRas 'husked rice' vs. Tibetan *ḥbras* 'rice'. Sagart has added the Old Chinese cognate 糲 ᵇmə-rat-s, and pointed out a second rice term Austronesian *Sumay 'rice as food' corresponding to Old Chinese 米 ᵃmijʔ 'grain of cereal' and Garo *may* 'paddy'. Kern believed that this loan correspondence pointed to the source whence the ancestors of the Tibetans had first acquired familiarity with rice.

If the veracity of either the Sino-Tibetan or the Sino-Austronesian hypothesis can ever be convincingly demonstrated, then this would compel us to decide in favour of Scenario 3. Yet at present the linguistic evidence for either hypothesis is not compelling. Whilst the lack of conclusive linguistic evidence does not support Scenario 3, neither does it invalidate Bellwood's model. Another line of reasoning which might sustain Bellwood's homeland hypothesis would be to argue that the current distribution of Tibeto-Burman groups could be accounted for if the Himalayas had for millennia served as a refuge area for people fleeing from more belligerent groups raiding, pillaging and waging war across more traversable terrain. The question formulated in the opening paragraph of this section alludes to this possibility. In other words, the present distribution of Tibeto-Burman linguistic diversity could arguably be a function of refuge areas and the traversability of terrain. Populations with cults possibly demanding horrific sacrifice, such as those suggested to some minds by Sānxīngduī iconography alongside the more concrete evidence found at sites such as Ānyáng, could have been amongst the repellent influences driving other Tibeto-Burman groups into ever more remote and sheltered alpine recesses.

Finally, Bellwood's Tibeto-Burman homeland in Scenario 3 extends all across Shǎnxī and abuts against Sìchuān, the homeland of Scenario 1. The disparity, therefore, is greater between Scenarios 2 and 3 than between Scenarios 1 and 3. The merit of Scenario 2 is that linguistic prehistory is reconstructed on the basis of the linguistic diversity situation, whereas the archaeological record is treated as testimony of the prehistory of material culture. One interpretation of the emerging population genetic data could support a version of Scenario 2, but this too may change as more data are analysed and interpreted and this multi-facetted story continues to unfold in ways perhaps unforeseen.

the Himalayan region was followed by a later migration of a Tibeto-Burman group back to the Yellow River basin.

Let us turn to a third view, which I shall call Scenario 3. Bellwood places the homeland of Tibeto-Burman, which he refers to as 'Sino-Tibetan', in an elongated region stretching along the lower course of the Yellow River in the northeast deep into Shǎnxī in the southwest. From this oblong territory he envisages the language family spreading into Gānsù and southwest into the Himalayas. The idea of agricultural dispersals in the Neolithic is an enthralling model. Such an interpretation of the archaeological record is an obvious one and was already pioneered by scholars such as Robert von Heine-Geldern. Yet the farming-language dispersal theory advocated principally by Bellwood and Renfrew differs essentially from associating the rapid spread of a specific and well-defined cultural assemblage such as, for instance, the Mǎjiāyáo Neolithic in Gānsù and its recognisable colonial exponents in eastern Tibet and Kashmir with the putative spread of ancestral Sino-Bodic groups across the Tibetan Plateau towards certain parts of the Himalayas.

Instead, the farming-language dispersal theory envisages genes and language spreading in tandem with the incremental spread of Neolithic agriculture. Weaknesses in this theory have been discussed in Section 3, where it was argued that the very opposite actually have happened in many instances in thr course of prehistory. We must consider such an alternative especially in those cases where the linguistic picture suggests a radically different view of prehistory than does the spread of material culture as reflected in the known archaeological record. What can be said in favour of Scenario 3? The Sino-Tibetan hypothesis that there exist some shared innovations that unify all non-Sinitic languages within a truncated 'Tibeto-Burman' group remains empirically unsupported. Yet the hypothesis remains an intrinsically interesting one, especially from a Sinocentric perspective, and it cannot be excluded that some linguistic evidence for it may be found one day. Clearly an empirically unsupported linguistic hypothesis cannot buttress the case for Scenario 3.

A second potential argument in favour of Scenario 3 might be sought in the Sino-Austronesian theory, the veracity of which, likewise, has yet to be demonstrated. I have already discussed in detail the evidence marshalled in support of the Sino-Austronesian theory elsewhere (van Driem 2005). If Sino-Austronesian were demonstrated to have existed as an ancient genetic unity comprising Tibeto-Burman and Austronesian, as Sagart believes, then this could imply that the Proto-Tibeto-Burmans were on the North China plain at the Lóngshān horizon. Yet, if the correspondences adduced by Sa-

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Significance of Kusundas and Their Language in the Trans-Himalayan Region

B. K. Rana
Harvard University,
Cambridge, MA
October, 22, 2006

General Background:

The Kusunda language does not remain a 'not well studied and classified' language anymore now. The government of Nepal funded for its detailed study with some leading linguists in the country. The National Foundation for Development of Indigenous Nationalities [NFDIN] brought at least two fluent Kusunda speakers along with few others from western part of Nepal in Kathmandu, funded for their 3 months stay to document data and organized a national seminar on the language on October 10, 2004. Enough data has been obtained and documented. The study shows Kusunda language doesn't resemble to any other languages in the world[1].

Since, I left Nepal for USA in 2003, I have been unable to establish any direct communication with the Kusundas whom I could discover among the mid-hills of Nepal in early 2000. However, I could obtain some other crucial data from Ms S. Thapa who brought Gyani Maya, a fluent Kusunda speaker, in her hometown of Butwal in the western plains of Nepal and video-graphed her interview in April 2003[2]. We have already discussed on those data in the Fifth Harvard Roundtable on Ethnogenesis of South and Central Asia at Cambridge on May 10 - 11, 2003.

Before the discovery of Raja Mama, a lone Kusunda of Tanahu in west Nepal, the linguistic communities held a belief that Kusundas have already vanished from the face of the earth and eventually their precious language also. But the discovery of Raja Mama opened up a new avenue for Kusunda research in recent years. This also led to the preservation of this important indigenous tribal community and its profound linguistic heritage. Now, another important job has to be done, providing direct benefit to the target community in compliance with the international laws, testing the Kusunda DNA. A few geneticists have already approached me in this regard.

The Nepal government has placed high priority to preserve certain near-extinct indigenous communities and their heritage. The National Foundation for Indigenous Nationalities,[NFDIN] a government entity headed by the Prime Minister, in whose governing council, Raja Mama

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[1] National Foundation for Indigenous Nationalities ,NFDIN http://nfdin.gov.np/1/content/view/74/43, David E. Watters et al: Notes on Kusunda Grammar [A language isolate of Nepal 2005]

[2] RECENTLY RECORDED MATERIALS ON THE KUSUNDA LANGUAGE.doc http://groups.yahoo.com/group/Langhali_Forum/files/

had been nominated a member in 2004[3]. This is a first record in Nepalese history that a Kusunda got nominated to a government entity.

Raja Mama and Lil Bahadur Kusunda:

After his discovery Raja Mama [Kusunda] drew enormous media attention in the country. The media still report him as 'a lone Kusunda' of Nepal; however, there are few more others in different parts of western Nepal.

The photo below was taken in February 2000 in Tanahu when I discovered him. He said he was fifty years old. He should have weighed 55 to 60 Kilograms and about 5 feet tall. He said to me he was born in jungle. He doesn't remember anything about his father. He remembers

He was a lonely fellow. He told me he used to hunt jungle fowl, forage yam, tuber and fruits. Nowadays, he doesn't go for a hunt. He helps other in agriculture. He just gave me some 50 Kusunda words

Raja Mama Kusunda

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[3]On Wednesday, August 25, 2004 Prof. Sant B. Gurung, Vice-Chairman of the Foundation, in an email message wrote, "Raja Mama has been nominated as a member of governing council of the Foundation. The Study on Kusunda language has begun in Kathmandu from August by linguists of Tribhuvan University supported by this foundation. The Foundation has brought three Kusunda for this purpose."

As Tamla Ukyab, the Member Secretary and ex-officio Executive Director of the Foundation told me over phone from Kathmandu that the government deposited in a fixed account Rs. 75,000.00 [little more than US $ 1000.00] in his name so that he could marry and start a family life. Now, he has married a woman - Tamla Ukayb said. Both Tamla Ukyab and Sant B. Gurung played a vital role for the recent study and preservation of Kusunda language. We are thankful of them.

Since, Raja Mama Kusunda had received wide media coverage in the country. Kusundas got prominence which led me to participate in the 4th Harvard Rountable in 2002. After the roundtable, I wrote a few articles on the Kusunda and published in major dailies from Kathamadu. People began taking deep concern in the Kusundas.

Almost one year after the discovery of Raja Mama Kusunda, All Nepal Indigenous Peoples' Convention, [ANIPC] a political forum of left-wing indigenous peoples, organized its second national convention in Kathmandu in April 2001 . Hundreds of representatives from among different indigenous peoples' communities in the country participated in the convention. The convention organizers told they wanted to hear and understand the issues of the indigenous tribal communities directly from their own mouth.

Lil Bahadur Kusunda, born in 1949

Therefore, the convention organizers had also invited Lil Bahadur Kusunda and his middle son Setu Lal Kusunda from Tiram Ward 6. Budhi Chaur, of Pyuthan district[4]. Lil Bahadur Kusunda had arrived Kathmandu with his particular traditional Kusunda weapon: bow and arrow. This Kusunda has also forgotten most of the Kusunda words as the Raja Mama Kusunda of Tanahu.

[4] Pyuthan, Rolpa, Rukum, Sallyan, Shurkhet and Dang districts are in mid-western Nepal and they may be some other Kusundas.

Lil Bahadur Kusunda has married a non-Kusunda woman and has 18 members in his family. He told me he lived in the jungle for 28 years. He doesn't speak any Kusunda. Since his is an inter-caste marriage, he children and grand-children are therefore also unknown about the Kusunda language. He told *huru* for bow and *guru* for the arrow. Actually, in Kusunda bow is called *tut* and arrow - *mui*[5].

Chepangs, Rautes, and Kusundas:

Chepangs were also a hunting group of people in the central hills of Nepal whose population size is 52237 [2001]. Nowadays, they don't hunt. They live in Gorkha, Dhadhing, Makawanpur and Chitwan districts - quite close to Kathmandu. These Chepangs speak one of the TB languages.

Rautes, population 658 [2001], are another group of foraging tribal community in western part of Nepal. They speak Khamchi, a TB language and roam, even today, amongst the deep forests in western part of Nepal. In the jungle they make huts tying together some vines with branches of small trees. Such huts are called 'rautees'. These Rautes run away from the Kusundas as the latter treat them as their 'subjects'. Rautes hunt monkeys and eat them.

The Chepangs do not call themselves Thakuris while Rautes and Kusundas have taken Thakuri surnames as: *Shahi, Sen, Malla* and *Shah*. A Thakuri erupts in bad temper when one talks of Kusunda in front of him. I had that kind of experience in one of my expeditions in search for Kusundas. The Thakuris are derogatively called 'Kusundas'. The Kusunda origin story as documented by Reinhard and Toba tells Kusunda, Thakuri and Magars are blood brothers[6]. This story, however, is in indigenous Kusunda language, sounds not very old.

Kusundas used to have some taboos: as they would not touch cow-dongs, would not eat or drink anything put in a milk pot. In other words, they would not eat anything if you have put some milk in a jar or bowl or whatever and used it later to give some rice or pulses to the Kusundas. The Kusundas would not live inside a house or hut

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[5] cf. Kham Magar *guleli* = bow and *mui* = arrow

[6] 1. */hancaa?i cinda mong-andi daahat gitaak ci?nda /* firstly those king-to three children were 2. */taaina? isyi naha mong wa?aaid-ai gidi duguci mizar* then there from king die -(v) his son eldest *mong dhanzigan/* king became. 3. */na mong-a-nun keti kam-ai/* this king -?- (v) field work (v 4. */tainaa qaadi ug-uo-da/ waaci watudan/* then paddy come up not, bushes grew 5. */qapiraa mahi mudadi-g-ai aambugatan wet-uoda/* and water buffalo milk- he- (v) milk come not. */qapiraa mudada-ai uyu watan/* and milk - (v) blood come-out. 6. */qapiraa gidaa-nun iyan-da zingia arzigan/* and he -(p) leg -on oil rub 7. */paasidai naatu mihaa? waad-ai/* black like man come-out -(v) 8. */mizut manzala-nun aa?-zi/* younger (brother) second - (p) say -(v) 9. */mam nu natan kamanan anu-n-na* brother you whatever work do- you - ? *wein ag-uoda/* good is not. 10. */nu raaza daanzi-nu yi?aaninu/* you king remain you can not 11. */ nu gilong dazi haau-nu yotata?a-zi pa?adaan-zi/* you forest live go -you beg-(v) hunt- (vi) 12. */taina gilong-da mihaa? isyi naha ugi/* then jungle -in man there from come 13. */manzala paalo ugan raaza gua/* second son turn come king be 14. */manzala kaam agandan kanianzi wein agan/* second son work done all good become 15. */sambaga manzala raaza git baha dambagan/* thus second son king he firm got 16. *mong-nun candi puza agandan* king Chandi worship done.

'A Preliminary Linguistic Analysis and Vocabulary of the Kusunda Language' by Johan Reinhard and Sueyoshi Toba, Summer institute of Linguistics, Tribhuvan University, Nepal. September 1970

tied with ropes or vines. The Kusundas would not kill monkeys for meat. This is what is striking the difference between Kusundas and Rautes.

Kusundas do not say themselves a Kusunda. They shun this word. In their own language they prefer calling themselves a *'myahaq'* - a King or *'gelang de mahaq'* - king of forest. Can this 'Kusunda' title be given by some other advanced communities to the Kusundas ?

A Designated Language Isolate:

The Kusunda has been designated a language isolate. The most recent study lead by David E. Watters again designate Kusunda as a language isolate. He writes the Kusunda has no relationship with any other languages in the world. There is enough Kusunda vocabulary on the Kusunda language. And, there has been a lot more works on the Kusunda being left undone after Hodgson and Reinhard & Toba.

Until recently the most popular Kusunda sentences used to be ***chi kadi gaman*** **(I rice eat),** ***git kadi gaman*** **(He rice eats) and** ***nu kadi naman*** **(You rice eat)**[7]. Now David Watters has worked on this and found five basic pronouns as: *chi* 'I', *tok* 'we', *nu* 'you', *nok* you (plural)' and *gina* 'he, she, that' and the equivalent of 'they' *gina dzina* 'they two', *gina da* 'they three' *gina pyangdzang* 'they four', *gina pandang* 'they five' and *gina many*, they many'. He offers the following sentences:

First Person:

a. t-am-an sl 'I ate'

b. t-am-da-n pl 'We ate'

Second Person

a. n-am-an sl 'You ate'

b. n-am-da-n pl 'You ate'

Third Person:

a. g-am-an sl 'He/she ate'

b. g-am-da-n pl 'They ate'

The singular morpheme *-an* is replaced by *-du* and plural morpheme *-da-n* by *da-k* in future tense below:

First Person:

a. t-am-du sl. 'I will eat'

b. t-am-da-k pl. 'We will eat'

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[7] Cf. Kham Magar *nga yai/kang jyonga* (I rice eat), *wola yai/kang jyowa (He rice eats) and nanga yai/kang jyona* (You rice eat)

Second Person:

a. n-am-du sl. 'You will eat'

b. n-am-dak pl. ' You [pl] will eat'

Third Person:

a. g-am-du sl. 'He/she will eat'

b. g-am-da- k 'They will eat'

Conclusion:

There has been no agreement on whether Kusunda is a language isolate or otherwise. Now, we have enough data with which we can tell that Kusunda doesn't have any relationship with any other languages in the world, however by accident or whatever, there are quite a number of Kusunda words among different languages.

The Kusunda 'mai = mother', 'suta= thread', '*mahi*= water buffalo' and '*miza* or *azaki* (cf. Sanskrit *aja*) = goat are interesting to note here. John Bengston attributes Kusunda 'mai' to Proto-Human.

The Kusunda pronoun 'nu' and Jarawa, a language spoken in the South and Middle Andaman 'ni' offer same meaning the second person 'you'. The Jarawa '*onnaho* = tooth' and Kusunda 'ouho = tooth' look alike while Jarawa 'na:ppo= fish' and Kusunda 'nasa= fish' have nasal sounds in their initial syllables.

John McWhorter points out that Kusunda and Oko-Juwoi, a language once spoken in India, has some similarities by close accident or whatever. He finds Kusunda 'chi= I' and Juwoi 'tui= I', Kusunda 'chee = my' and Juwoi 'tii-ye = my' and Kusunda 'gida= he/she' and Juwoi 'kite= my'[8].

We now understand Kusunda has given its cognates to a number of different languages and therefore it would be reasonable to designate it a Mother Language or similar other title than any isolate. This language is not in isolation but has shared with many others in the world.

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[8]**Can relationships between languages be determined after 80,000 years?**

So in that light, we must take note that Kusunda for "I" is CHI, where in Juwoi it is TUI. T becomes CH constantly over time: witness how many Americans say "chree" instead of TREE. Then Kusunda for "my" is CHI-YI -- and in Juwoi, TII-YE. Kusunda for "you": NU. In Juwoi, NGUI. "Your" in Kusunda: NI-YI. In Juwoi: NGII-YE. Note that pattern of sticking on a YE or YI -- this is too close to be an accident. "He/she" in Kusunda is GIDA. In Juwoi it is KITE -- and if you think about it, G is basically K enunciated in a slightly different way. And yet there is no way that the Kusunda have been helicoptering over the millennia to the Andaman islands. And certainly not to Western New Guinea, where in the Seget language, Kusunda's CHI, NU, GIDA comes out as TET, NEN and GAO (remember that CH comes from T all the time). And then way over on the Solomon Islands east of New Guinea, the same pattern echoes: where Seget has NEN for "you" and GAO for "he," Savosavo has NO and GO. http://itre.cis.upenn.edu/~myl/languagelog/archives/001037.html

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More references to follow ..

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A Multilateral Look at Greater Austric

John D. Bengtson
Association for the Study of Language in Prehistory

From the outset let me admit that I approach this task with great trepidation. I am not a specialist in any Austric language or language family, and my interest in this macro-family grows out of my broader interest in the genetic classification of the world's languages. I do not claim to provide any final answers to the "Austric Problem" in this paper, only to update my earlier work on the topic and suggest some ideas for the position of Nihali and Ainu in this old macro-family.[1]

Austric Defined

Wilhelm Schmidt (1906) is usually regarded as the father of Austric (Austroasiatic + Austronesian), though others (*e.g.,* Trombetti) had similar ideas. By the 1940's (Benedict) a "Greater Austric" consisted maximally of Schmidt's two families plus some others: Miao-Yao (Hmong –Mien) and Daic (Tai-Kadai). Benedict later modified his view of Austric to exclude Austroasiatic, and added Japanese to his "Austro-Thai" (1990). See Ruhlen (1987), Fleming (1987), Diffloth (1990, 1994), and van Driem (1999) for details and assessments of the history of Austric classification.

Ilia Peiros (1992) offered a classification of (Greater) Austric as follows:

I. Austro-Thai
- 1) Austronesian
- 2) Daic (= Tai-Kadai)

II. Miao-Austroasiatic
- 1) Miao -Yao (= Hmong-Mien)
- 2) Austroasiatic (= Munda - Mon-Khmer)

Some Greater Austric Proto-Etymologies

Before attempting a discussion of the position of Nihali and Ainu in Austric (if any), I will begin by listing some of the most promising lexical parallels involving Nihali, Ainu, and the Austric languages.

Disclaimer: The following list of lexical parallels between Nihali, Ainu, and the Austric languages should not be considered definitive etymologies. These "proto-etymologies" represent some of the early steps in the inductive phase of the demonstration of genetic relationship. During the deductive phase the formulation of regular phonetic correspondences allows us to determine the greater (or lesser) probability of the language family being proposed (in this case, "Greater Austric"). Gradually the etymologies are either strengthened, or divided (*i.e.,* the words are re-

[1] I am grateful for suggestions and materials provided by colleagues, especially Václav Blažek, George van Driem, Harold Fleming, La Vaughn Hayes, Peter Norquest, George Starostin, Paul Whitehouse, and Norman Zide. They do not necessarily share my controversial views, and any errors remain my responsibility. I am also deeply thankful to the Evolution of Human Language Project / Santa Fe Institute for its support and for materials from its databases. Much gratitude is owed to the late Sergei A. Starostin.

distributed into two or more new etymologies), or completely rejected if phonetic and morphological testing show them to be invalid as genetic cognates.

Proto-Austric reconstructions, as well as other reconstructions, are cited for reference only. Their citation does not imply this author's endorsement.

bird: PAustric **mVnuk* 'bird' (EHL); PAustro-Thai **[ma]mlok*

- MY: PM **nɔŋ*, PY **nɔʔ* 'bird' (Kosaka 2002: 91)
- AN: PMP **manuk* 'bird, fowl' > Javanese *manuk*, Hainan Cham *nuʔ*, Maori, Hawaiian *manu* 'bird', etc.)
- Daic: PTai **nl/rok*, PSWTai **nok* 'bird' (TLR), PKam Sui **mluk*, Lakkia *mlok*, etc.
- Ainu **nOk* (V) 'egg, testicle': Kamchatka *nôhk*, Sakhalin *nuku* (Klaproth 1823), Kuril *noki* 'egg', *n'ok* 'bird's egg'

§ AT 233; BB 30. Ainu > Nivkh *ŋóik* 'egg', or Nivkh > Ainu after Vovin. Hayes (Austric Glossary) compares PAA **puk, *p(a)luk* 'bird' and PMP **manuk* 'bird'.

bite:

- AA: Munda: Sora *kab*, Mundari *ha'b*, Kurku *kap* 'to bite' (CM); MK: Bahnar, Kui, Chrau *kap*, Brou *káp*, Semai *kap* 'to bite' (S98)
- Daic: PTai **xep* 'to bite' > Thai *kʰòp* (TLR); PKam-Sui **krip* 'bite, chew' (Thurgood)
- Ainu **kupa* 'to bite' (V) > Hokkaido *kùpá-*, etc.

§ N98, S98.

blood: PAustric **xam, *ntsixam, *dzaxam(uq)* (Hayes), **hVm* (EHL)

- PAA **Cə-ha:m* 'blood' (EHL): Munda: Kharia *eñam*, Sora *míñam*, Mundari *mayam*, Korku *mayum;* MK: Bahnar *pha:m*, Khmer *ĵha:m*, Mon *chim* (P96, S98);
- MY: PYao **džhyaam*, PMiao **ntšhɛŋ* 'blood' (Kosaka 2002: 91, 94)
- AN: East Formosan **dzamu(ʔ)* 'blood' > Paiwan *djamuq*, Pazeh *damúʔ*, Saisiat *ramoʔ*, Squliq Atayal *rammo, ramuʔ* (ABVD)
- Ainu **kEm* 'blood' (V) > Hokkaido *kêm-í*, Kuril *kiem*, etc.; cf. **kam* 'flesh, meat' (V)

§ AT 235; S98. Cf. also **flesh:** Ainu has **kEm* 'blood' vs. **kam* 'flesh', and ultimately these might be ablaut (or umlaut) variants of the same word. Cf. the IE word family that includes English *raw*, Russian кровь 'blood', Greek κρέας 'flesh', etc.

bone: PAustric **tsuqaŋ* (Hayes)

- AA: Munda: Santali, Kharia *jaŋ*, etc.; Nicobar *ong-eng*; Khasi *śʔeeŋ*, PKatuic **ŋhaaŋ*, Ruc *sàŋ*, SBahnaric **ntiiŋ*, Vietnamese *xương* etc. 'bone' (Diffloth 1990)
- MY: PMY **tshuŋ* 'bone': PYao **tshuŋ*, PMiao **tshɔŋ* (AT 239; Kosaka 2002: 94)
- AN: PAN **[t]ulaŋ* 'bone' (Dempwolff: Malay *tulang*, etc.) = PAN **CuqelaN* 'bone' > Saaroa *cúlaɬə*, Paiwan *tsuqelaɬ*, Basai *tolal*, etc. (ABVD, Dahl 67)
- Daic: PTai **ʔdl/ruok* (TLR); PKam-Sui **tla:k* (Thurgood, N98)
- Ainu **kEqu* (V) 'bone' (only in compounds; otherwise replaced by **pone* < Japanese)

§ AT 238. N98 compared AN + Daic + Ainu. The etymological unity of all these words seems doubtful. Perhaps Ainu **kEqu* is better compared with some AN Formosan words: Puyuma *ʔokák*, Central Amis *okak, ukak* 'bone' (ABVD).

brain / marrow:

- Daic: PTai **ŋ[ui]* 'marrow'
- Ainu **nOqi=pE* 'brain' > Hokkaido *noype-*, etc.

§ N98.

breast: PAustric **su* (Hayes)

- AA: Munda: Santali, Mundari, Birhor *toa* 'milk, (female) breast' (CM); MK: Khmer *ṭoḥ*, Mon *tah*, Bahnar *tåh*, Stieng *toh*; SNicobar *toāh*; Asli: Mah Meri, Semaq Beri, Semelai, Temoq *tuh* 'breast'
- AN: PAN **θuθu* (Tsuchida) = **susu* (Blust) 'breasts of woman' > Tanan *θoθó*, Maga *θúθu*, Paiwan *tutu*, Ami *tsutsu*, Palauan *tut*, Malay *susu*, Tagalog *súsu*, etc. (ABVD, Dahl 79, 85)
- Daic: PTai **tu* 'breast'; Lakkia *nam-tu* 'stomach', Ong-Be *dau dɔn* 'the pit (*dɔn*) of the stomach'
- Ainu **tOO* 'breast of woman' (V): Kamchatka *do* (Klaproth 1823) and / or PAinu **tuy* 'belly, intestines' (V)

§ BB 19, S98. AN: Banggi, Wolio *dudu*, Palawan Batak *dudu, dudúk* 'breast' is regarded as a separate etymon by Blust, et al. (ABVD).

chest:

- AA: MK: Khmu (Yuan) *àk* 'chest'; Pear *yok* 'breast'; Katuic: Pacoh *oq* 'stomach' (AG, Hayes 1996);
- AN: PMP **hauak* 'body' > Toba Batak *aoak* 'body', *ak* 'hip, waist', Malay *awak* 'body, person' (Dahl 122)
- Daic: PTai **ʔu̯ɯk* 'chest' > Tai *òk*, Dioi *ak* (TLR, AT 249)
- Ainu: Hokkaido *ok* 'heart; feelings' (B)

§ AT 249; BB 45; Cf. BB 57: Ainu **Ok* 'nape, back of the neck' + MK: Nicobar: Car *uk* 'back', *uk alaha* 'skin'.

child (1):

- Nihali (K) *lānā* 'child, son' (apparently not known to Bh and M: Fleming [1996])
- Daic: PTai **hlan* 'grandchild', **hlen* 'great-grandchild' > Thai *la˘an, le˘en* id. (TLR); PKam-Sui **khla:n* 'grandchild' (Thurgood)

§ Comparison by Shafer (1940). Cf. AT 303.

child (2):

- AA: Munda: Sora *tɔnan* 'sister', Gutob *tonan* id., Parengi (Gorum) *tonan* 'younger sister', Bonda *tuna* id. etc. (CM, Hayes 1996)
- MY: PMY **tɔn* 'son' ('offspring, both human and animal') (AT 251)
- Ainu (Hokkaido) *teinep, tennep* 'a very young child' (Batchelor)

§ BB 20. Cf. AT 251 + PAN **natu* 'offspring'.

chin:

- MK: Khmu *thno* 'mouth'; Asli: Pangan Ulu Aring *tĕnöyt*, Orang Hutan (Johor) *snut*, (Indau) *nut*, Sakai Ulu Tembeling *kì-nut* etc. 'mouth'
- MY: PMY **ndzuj* 'mouth' (AT 340)
- AN: PAN **ŋu[t']uʔ* 'lips' (Dempwolff) = **ŋu(ts)u* (Biggs) > Samoan *ŋutu* 'mouth', Marquesan *nutu* 'snout, head of animal', Niue *ŋutu* 'mouth, beak, orifice', etc. (ABVD); cf. Formosan **ŋudzui* 'mouth' > Central Amis *ŋoyos*, Rukai *ŋodui*, etc. (ABVD)
- Daic: PTai **hnuat* 'beard' > Thai *nùat* (TLR); PKam-Sui **m-lu:t* id. (Thurgood)

- Ainu: **nOt* 'chin, jaw' (V) cf. (Hokkaido) *not* 'mouthful', *not(u)* 'jaws, *notakam* 'cheeks', *nota* 'face', *notkiri* 'chin', *notkeu* 'jaws', *nočі* 'mouth, jaws' (Batchelor), and (la Pérouse) *notame kann* 'les joues'

§ BB 55, N98.

cold:

- AA: Munda: Gutob, Remo, Gutob *ruoñ* 'cold', Sora *raŋa:-n,* Santali, Mundari *rabaŋ* id. (CM, Hayes 1996)
- AN: Tsouic **uruNa / *ürüNa* 'snow' (Li).
- Ainu *oroa* 'coldness' (Dobrotvorskij) = (La Pérouse) *oroa* 'le froid' (Naert 1961)

§ BB 21.

come/go:

- Nihali (K) *pīya,* (Bh) *pi- (pa-)* 'to come'; cf. (Bh) *paṭ-, piy-* 'to come', (M) *páto* 'to come, approach', *paṭṭo* 'to come'
- AA: Munda: Gutob *pe, pi, piŋ* 'to come', Parei of Viza-Gapatam *vA:ji* id.; MK: Bolowen *bɯh,* Alak *bɤh* 'to come'; Kui *paʔ* 'to go, come'; Aslian: Semang Plus *peh,* Sakai Tanjong *bai, bej* 'to come'
- Daic: PTai **pəi,* Kam-Sui **pa:i* 'go, walk'(Thurgood), Lakkja **pai,* Be *ɓoi* 'to go'
- Ainu **pay-i* (pl.) 'to go'; cf. **Epa* 'to arrive' (V)

§ NA 24; BB 39; N98, S98. Shafer (1940) compared Nihali + MK.

day:

- AA: MK: Waic **N-koʔ* 'yesterday' (Diffloth)
- AN: PAN **ka* 'day'
- Ainu *ko,* cf. *tut ko* '2 days', *rere ko* '3 days', but *šine to* '1 day' (Batchelor)

§ BB 23.

die: PAustro-Thai **(ma/)play* 'die' / **[pa/]play* 'kill' (Benedict)

- Nihali (Bh) *paḍa,* (M) *páḍā* 'to kill' (if *pa-* corresponds to the Proto-Austric causative prefix **pa-*)
- PMY **day* 'die' vs. **tay* 'kill' (AT 269); PYao **tai,* PMiao **dua* 'to die' (Kosaka 2002: 81; the correspondence of Yao **ai* = Miao **ua* is regular)
- AN: PAN **m-aCay* 'die' / **p-aCay* 'kill' (with stative **m- vs.* causative **p-* prefixes) > Saisiat *masay* 'die', Tsou *mcói,* Rukai *waʔacái, opacai,* Paiwan *matsay* d. / *pa-patsay* k., Palawan Batak *patáy* d. / *qimatáyən* k.; Malay *mati* 'die', Maori *mate,* Hawaiian *make* id. (ABVD)
- Daic: PTai **trai,* PSWTai **taai* 'to die' (TLR); Sek *pra:i,* Lakkia *plei* id. (AT 269)
- Ainu **day* 'die' (EHL, V) > Yakumo, Saru *ray,* Nairo *tay,* etc., Kuril *rai* 'kill'

§ AT 269; V92; BB 24. The correspondence of Ainu **d (r-/t-)* vs. Tai **tr- / *pr-,* AN **-aC-* also occurs in **eye (2).** Note that the original prefixes are exchanged in some AN languages (*e.g.*, Palawan Batak), a "confusion" that might have taken place in other parts of Austric.

dog:

- Munda: Santali, Kherwari, Ho, Asur *seta,* Kurku *sita, tsita, ćita,* etc. (S98, Blažek 1996)
- AN: Formosan: Favorlang *zito* 'dog' (ABVD)
- Ainu **sieta* (EHL), **gita* (V): Hokkaido *seta, sita,* Sakhalin *šeda,* Kamchatka *stāhpŭ* (**sita* + **po* 'child'), Moshiogusa *hida, heta*

§ BB 25, S98.

drink:

- AA: Munda: Remo *uʔ-* 'to drink', Gutob *uk-, ug-* id. (CM); MK: Khmu *uak,* Ksinmul *ʔuk,* Loven *okʔ,* Boloven *ok* 'to drink' (S98)
- Ainu **kuu* 'to drink' (V) > Hokkaido *kú,* Kuril *ku, kun-ku,* etc.

§ S98. Cf. **water (2).**

dry:

- AA: Munda: Santali, Mundari, Korwa *añjɛd* 'dry, to get dry', Santali *hawɛ'd* 'to dry, dry up, evaporate, drain, be purified' (CM); MK: Khmer *sŋuət,* Kui *sʔaːt* 'dry' (S98)
- AN: ? Old Javanese *sat, a-sat* 'dry' (ABVD)
- Daic: ? Thai *sa.dèt* 'to dry rapidly' (no reconstruction) (TLR)
- Ainu **sat* 'dry'(V) > Hokkaido *sát,* Kuril *satéke, satgua,* etc.

§ S98 MK + Ainu.

ear (1): PAustric **tVʔlu* (EHL)

- PAA **toːr* 'ear': Munda: Bonda *luntur,* Sora *luʼuḍ, luḍ,* Mundari, Korku *lutur,* Gutob *lintir, nintiri, ritil* (CM); MK: Chrau *toːr,* Kui *kətɔːr,* Mon *katow,* (P96, S98)
- AN: **tuliʔ* 'earache, deaf' (Dempwolff) > Hanunóo *túli* 'ear', Bonerate, Popalia, Sangir *tuli,* Makassar *toli* 'ear' (ABVD); cf. Maori *turi* 'deaf'; cf. PAN **tilu* 'earwax, ear' > Manggarai *tilu* 'ear', Elat *tilum,* etc. 'ear' (ABVD)
- Ainu **tur* 'filth, dirt': cf. *kisara-turu* 'earwax' (Batchelor)

§ BB 29. Hayes (Austric Glossary) reconstructs PAustric **qeŋ, *qeḷeŋ* 'ear', including some of the AA words cited under **ear (3).** The status of PAN **Caliŋa* 'ear' (Paiwan *tsaliŋa,* Pazeh *sangira,* Malay *telinga,* Maori *taringa,* etc.) in relation to the above is uncertain.

ear (2):

- MK: Khasi *shkór, kaškoːr,* Riang (Palaung-Khmu) *cor*
- Daic: PTai **xrɯ̯ɯ,* PSWTai **xruu* > Thai *hŭu* (TLR); PKam-Sui **khra* (Thurgood, N98)
- Ainu **kisara* (EHL), **kisAr* (V): Sakhalin *kišara,* Kamchatka *gsāhr* (Klaproth)

§ BB 26. S98 Ainu + Khasi, etc.

ear (3):

- Nihali (Bh) *cigam* 'ear', (M) *cigām(a)* 'ear/s', (K) *cikn-* 'to hear', (M) *cākini* 'to hear'
- AA: Munda: Kurku *cina* 'to recognize, know'; MK: PKatuic **saŋ* 'to hear'; Aslian: Serting, Besisi *tĕgn* 'ear', Tembi, Serau, Darat *entak*^{n} 'ear'

§ Blažek (1996); Bengtson (1997a).

earth (1):

- AA **täih* 'earth, soil' (V92) or **t*[*e*](*q*) (Hayes): MK: PMon **tiiʔ* (Diffloth) 'soil, earth, ground': Old Khmer *ti,* Waic **ktɛʔ* (Diffloth) 'earth'; Bahnar *teh,* Sre *tiah,* Bo Luang *teːi*; Nicobar: Central *mattai,* Coastal *pattai* 'earth'; Khasi *ktioh* 'Schlamm'; Asli: Semang Perak *teh,* Pangan Ulu Patani *tei,* Sakai Krau *tai*^{k} etc. 'earth'

- AN: PAN **taq* > Puyuma *litaH* 'mud', Amis *potaʔ* 'soil, soft mushy dirt', *sotaʔ* 'earth; dirt; mud; land' (ART 152); Favorlang *ta, ta-os ata* 'earth, soil' (ABVD)
- Daic: PKam-Sui **di* 'dirt, earth' (Thurgood)
- Ainu **tOy* 'garden, soil, land, clay, earth' (V): Sakhalin *toi, tui* (Klaproth 1823)

§ BB 27, S98.

earth (2):

- AA: MK: SBahnar **tneːh* 'earth', NBahnar **taʔnɛh* 'earth, dirt'; Mon *tanah* 'surface' (borrowed from Cham *tanŭ'h*?)
- MY **ntaa(n)* 'earth' (AT 278)
- AN: **tanah* 'land' (Dempwolff) = *taneq* (Dyen & McFarland) > PMP **tanaq, *taneq* > Malay, Old Javanese *tanah* 'land, earth, soil', Itbayaten *tanaq*
- Daic: PSWTai **ʔdin* 'soil, ground, earth' (TLR); Mak *daːi*, Lakkia *nai*
- Ainu *tanina* '... autre nom quils donnent cette terre' (La Pérouse), **ta(a)ni na* 'here'

§ BB 28. Hayes (Austric Glossary) combines **earth (1)** and **earth (2)** as the same entry, PAustric **taq, *teq,* and infixed **ta-na-q, *te-ne-q.*

egg:

- Nihali (Bh) *kāllen,* (M) *kalen* 'egg', *kaleni* 'eggs', *kalen-ṭa* 'eggs of lice'
- AA: Munda: Juang *susuter, susuterɔ* 'egg'; MK: Brou *tareil,* Katu *karial,* Pakatan *təluːl,* etc. 'egg' (AG)
- MY: PMY **qyaw* = **qɻaw* 'egg'
- AN: PAN **qiCeluR* 'egg' > Paiwan *qetsilu,* Kanakanabu *icúuru,* Thao *qaricuy,* Madurese *tellor,* Tagalog *itlóg,* etc. (ABVD)
- Daic: PTai **khrəi* > Thai *kʰày* (TLR); PKam-Sui **krai* 'egg' (Thurgood)

§ AT 279; Bengtson (1997a). Nihali *kāllen* < **qaCleN,* or the like?

evening:

- AA: MK: PBahnar **maŋ* 'night'
- MY: PMY **hm*[*aː*]*ŋ* 'night'
- AN: Ci'uli Atayal *malahŋan,* Squliq Atayal *hŋan,* Saisiat *hawan,* Thao *tanlhuan,* 'night' (ABVD)
- Daic: PKam-Sui **ʔñam* 'evening' (Thurgood) < **ʔŋam ?*, cf. PTai **ɣam* 'evening' (TLR)
- Ainu (Hokkaido) *onuman* 'evening' = Kamchatka *ōhnūmã,* Sakhalin *unumani* (Klaproth 1823); V reconstructs **nuuman* 'yesterday' vs. **onuuman* 'evening'

§ BB 31. Cf. AT 264-265.

eye (1):

- Nihali (Bh) *jiki,* (M) *jiki(r)* 'eye'; *jiki-kāpri* 'eyelid' ('eyebrow' per Bh)
- Munda: Juang **je* 'eye': in *je-tej* 'eye-sand' (Mundlay [1996b]); cf. Santali *jhiki miki* 'splendid, glitter')
- AN: Formosan: Atayal (Squliq) *loziq* 'eye' ~ *raoyăk, rao-i, ro-i*, Pazeh *dourik, daorek, darik,* Sediq *dóríḱ, dourŭk* (N98, ABVD)
- Ainu **siki* (EHL), **sik* (**gik, *hik* V), Hokkaido *šik* 'eye', *šik-kap* 'eyelid' (B)

§ BB 32. Nihali *–r(V)* as in *jikir* '(my) eye', *jiki-kāp-ri* '(my) eyelid' is a personalizer (Mundlay 1996a: 7). The Formosan words are only relevant if the syllable *-ziq ~-yăk, -rik,-rek, -ríḱ, -rŭk* is etymologically

separable. If so, it could mean the retention of an archaic Austric word in some of the most divergent languages of Austronesian. Elsewhere **eye (2)** prevails. Shafer (1940) compared Nihali + Ainu.

eye (2): PAustro-Thai **mapḷa* (Benedict)

- Munda: Kurku *met,* Ho *me'd,* Kharia *mɔ'ḍ,* Sora *mɔ'ɔḍ,* etc. (CM); MK: Katu, Bahnar, Sedang *mat,* Kui *mạạt,* Vietnamese *mắt* (AG)
- MY: PMiao **maay,* PYao **muəi / *mu[t]-* (AT 283)
- PAN **maCa* (Dyen) > Saisiat *masaʔ,* Paiwan *matsa,* Puyuma *maṭaʔ,* Thao *má:θa,* Malay, Maori *mata,* Hawaiian *maka,* etc. (ABVD, Dahl 19)
- Daic: PTai **tra* > Thai *taa* (TLR), PKam-Sui **thla* (Thurgood), Sek *praa,* Lakkia **pla,* etc. (AT 283)
- Ainu **dara* (Vovin's **rAr*) 'eyebrow': cf. (Batchelor's Hokkaido) *rara-numa, ran-numa* 'eyebrow,' where *numa* 'hair' indicates the meaning 'eye' for the first component; the form *tara* recorded by La Pérouse allows us to reconstruct PAi **d-* (cf. V 16)

§ AT 283; BB 34. The correspondence of Ainu **d (r-/t-)* vs. Tai **tr- / *pr-* // AN **-C-* also occurs in **die.**

feather:

- AA: Khmer *slap* 'feather' (S98), Brou *khlap* 'wing'
- AN: ? Saaroa *alápuŋ,* Kanakanabu *apoŋu,* Tsou *eopúŋu* 'wing' (ABVD)
- Ainu **trAp* 'feather' (V) > Hokkaido *rap(u),* Kuril *trap* (also 'wing' in some dialects)

§ V92, S98.

fingernail:

- AA: MK: Waic **mhem / *hmem* 'fingernail'; Mon *saṇem* 'claw, nail', Nyakur *ŋhí:əm* id. (S98)
- AN: Formosan: Common Puyuma *hamay* 'fingernail' (Ting)
- Ainu **(H)am* (V) 'finger or toe nails, claws' > Kamchatka *āhm,* Sakhalin *ami* 'fingernail' (Klaproth 1823)

§ S98, BB 36.

fire (1):

- Nihali (K,Bh) *āpo* 'fire', (M) *ápó* 'wood, to be lit, fire', *ápo-kama* 'to light a fire'
- MK: Brao *pa:j,* Tampuon *pae* 'fire' (S98); Khasi *dpey* 'hearth, ashes'; Pearic *puy* 'tinder'; Katu *mpoih* 'fire', etc.
- MY: Ke-cheng *fwi* 'ash', Kao-p'o *fi,* Kao-t'ung *hə,* Yao-lu *fui,* Thailand Yao *whi*
- AN: PAN **Sapuy* > Bunun *sapuđ, sapos,* Paiwan *sapuy,* Pazeh *hapúy,* Siraya *apoy,* Tsou *puzu,* Palawan Batak *qapóy* (=*ʔapóy*), Malay *api,* Tonga *afi,* Maori, Hawaiian *ahi,* etc. 'fire' (ABVD, Dahl 35, 45); cf. Atayal pə-*hapuy*-an, p-*hepuy*-an 'fireplace, hearth' (W97)
- Daic: PKam-Sui **pwai* (Thurgood); PHlai **f-* (N98); PTai **vɛi,* PSWTai **vai/aɯ* 'fire' (TLR)
- Ainu **apOy* 'fire, hearth' (V), Hokkaido *ape, abe, ambe,* Kamchatka *āpĕh,* Kuril *aboi*

§ AT 290, BB 37, N98, S98. Hayes (Austric Glossary) reconstructs PAustric **suy, *sapuy* 'fire'. Shafer (1940) compared Nihali + Indonesian; Kuiper (1948: 378, note 2) mentions Nihali *āpo* + Indonesian **apuy* + Ainu *ape (apoi),* citing also Gjerdman (1926).

fire (2):

- Nihali (M) *ú, uru* 'to kindle', (Bh) *uri-*

- PAA **uń ?* (Vovin): Alak, Stieng *uiń,* Bahnar *uń*, Chrau *uń, uiń,* etc. 'fire' (V92), Khmer *'uh* 'firewood'
- Daic: PTai **viin* 'firewood'
- Ainu: **un-ti* 'fire', **uu(y)na* 'ashes', **uguy* 'to burn' (V): Hokkaido *uínà, ùhúy*

§ NA 26; BB 14; Nihali *uri* probably < Dravidian (Blažek 1996), though *ú* matches well with the MK words.

fish: PAustric **ka* (EHL), **(i)ka* (Hayes)

- Nihali (Bh) *cān,* (M) *cán*
- Munda: Mundari *hai, haikɔ, haku,* Korku *kaku,* Santali *hako* (CM); MK: Mon *ka* (P96); Khasi *kha,* Vietnamese *cá,* etc.
- AN: PAN **Sikan* > Bunun *ʔiṣkan*, PMP **hikan* > Hainan Cham *ka:n,* Malay *ikan,* Maori *ika,* Hawaiian *iʔa,* etc.
- Daic: PTai **ka:* 'a kind of fish' (EHL)

§ Bengtson (1997a). For palatalization in Nihali, cf. (AN) Wolio (Sulawesi) *isa* 'fish'< PMP **hikan;* (AA) Brou *sêaq* 'fish' < PAA **(i)ka(q).*

flesh:

- Nihali (Bh) *kāv,* (M) *kāw* 'flesh' (?< **kãw* < **kam*)
- AA: Aslian: Serting *kĕbó* 'body' (Blažek 1996)
- AN: PAN **qayam* > Saisiat *ʔäyäm* 'meat', Ami *qayam* 'bird', Puyuma *ħayam* 'bird', etc. (assuming semantic change 'flesh, meat' > 'bird') (Dahl 66)
- Daic: Li **xaam* 'flesh', White Sand Loi *kham,* Shaved Head Loi *ham,* etc. (AT 293)
- Ainu, **kam* 'flesh, meat' (V); cf. **kEm* 'blood' (see **blood**)

§ NA 12; BB 38; N98. For Nihali *kāw, kāv* (?< **kãw*< **kam*), cf. the areal parallels: Romani *nav* 'name' = Hindi (tadbhava) *nāũ* < Old Indic *nāma-;* Kannada *kavuṅkuṛ* 'armpit' ~ Tamil *kamukaṭṭu,* etc. Cf. also **blood:** Ainu has **kEm* 'blood' vs. **kam* 'flesh', but ultimately these might be ablaut (or umlaut) variants of the same word. Cf. the IE word family that includes English *raw,* Russian кровь 'blood', Greek κρέας 'flesh', etc.

fly (insect):

- Nihali (Bh) *eḍŭgo* 'fly', (M) *édugo* 'house-fly'
- AA: Munda: Korku *ruku, ru:ku:,* Mundari *rɔkɔ,* Ho *roko,* Gutob *uroy* 'fly' (CM); MK: Bahnaric **ruɔy,* Semang *roai* id. (Bh)
- AN: PAN **likeS* 'mosquito' > Formosan: Central Amis *likes,* Siraya *rikig,* Thao *rikish,* etc. (ABVD)
- Daic: PKamSui **ʔdlu* 'bee, wasp'

§ Bengtson (1997a).

foot:

- AA: MK: Palaungic: Danaw *kɔʔ* 'foot, leg'; Viet-Muong: Ruc *təkṵk* 'foot of a tree' (Hayes 1996)
- AN: Formosan: Rukai **kukuq / *ququq* 'foot, base, origin' etc. (AT 296)
- Daic: PTai **kok* 'foot (of tree, hill)'; Lati *ton kho*, Li *khok*, Ong-Be *kok* 'knee' (AT 296)
- Ainu **kOkka* 'knee' (V); cf. Kamchatka *kōhkãh,* Sakhalin *koka šaba* (*šaba* 'head') (Klaproth 1823)

§AT 296; BB 47. Gjerdman (1926, p. 53) compared Ainu 'knee' with Tagalog *koko* 'elbow' and Stieng *kuktang* 'knee'.

four:

- Nihali **-pono* in (M) *ṭal-pono* 'fourth' (ordinal numeral), perhaps with the same prefix as *tal-āri(re)* 'third' (Mundlay 1996, p. 45)
- AA: PAA **pu[]an* 'four': Munda **[u]pɔn* 'four' (Pinnow); MK: Khmer **puən*, Mon *pon*, PBahnar **puən* (Sidwell), PWaic **pon*, PKatuic **puɔn* (Peyros), PViet-Muong **pon* > Vietnamese *bốn*; Nicobar: Central *fo:ən*, Car *fɛɛn*, South *fɔ:ət*, etc.; Asli: Serting *hɔmpudn*, Sakai (Tembeling) *əm-pun*, etc.
- AN: ? PAN **Sepat* 'four' > Sediq *sŭpŭt, spat,* Bunun *pat,* Paiwan *sepatj,* Javanese *papat,* Malay *ampat,* Tagalog *ápat,* etc.; cf. forms with *-n-:* Micronesian: Trukese *faan,* Puluwatese, Satawalese *fáán,* etc.; Papuan Tip: Mekeo *pani,* Roro *báni,* Gabadi *vani,* etc. (ABVD)
- Daic: Laqua *pe,* Kelao *pu,* Lati *pu* 'four' (AT 211)
- Ainu: PAinu **pOqOn* > Saru *poʔón émko*, Asahigawa *pón émko* 'quarter' (**EmkO* 'half, part'), lit. 'four parts' (V)

§ AT 211BB 13; V92; Vovin (1993: 168: Ainu + Munda + MK). The question is whether the **pVn* forms are related to the **pVt* forms (cf. *n ~t* in Nicobarese).

full:

- MK: Riang *s'ak* 'full, satisfied', Lamet *śāk* id.
- AN: PAN **sek* 'to cram, crowd' > Ilokano *pusék* 'dense, close, crowded together, packed', Manggarai *cecek* '(to) stuff, fill up', etc. (ART 150-151)
- Ainu **sik* '(to be) full' (V) > *shis, ashik, eshik* 'full' (Batchelor)

§ V92, S98 MK + Ainu.

give:

- Nihali (Bh) *ma-,* (M) *mā* 'to give'
- AA: Munda: Santali *ɛm* 'to give', Mundari *ɔm, ɛm,* Ho *em,* Birhor *ɔm, ɛm,* etc. (CM); MK: Sedang *ám,* Chrau *àn* 'to give' (Thomas 1966)
- Ainu **Am=a* 'to put (it)' (singular), **Am=dE* 'to put (it)' (plural) > *ama* 'to put, to place' (Batchelor), Kuril *amma* 'to put it', etc. (V)

§ Mundlay notes Nihali *mā* "rarely used"; apparently the more common synonyms are *be-* (< Munda) and *de-* (< Munda or Indo-Aryan; Kuiper 1966:61).

hair (1):

- Nihali (K) *kuguchi,* (Bh) *kuguso, kuguchyo,* (M) *kugusu, kuguso* 'hair'
- AA: Santali *goco* 'beard, mustache', Mundari , Kharia *gucu* id. (CM)
- Ainu (Hokkaido) *kiški* 'animal hair, fur' (Batchelor *kishki*)

§ NA 16.

hair (2): PAustric **sək, *suk* (Hayes)

- Nihali (M) *sikā* 'pubic hair'
- AA: PAA **sok/*sɔ:k* 'hair' (EHL) > Munda: Kharia *sɔʔ*-lui 'hair'; MK: Khasi *suʔ,* Mon *sok,* Alak *sok,* Bonam *sak,* Khmer *sɔ:k* 'hair of head', Vietnamese *tóc,* etc.
- AN: PAN **buhuk* 'hair' (Dempwolff) = **buSək* (Dahl) = **bukeS* (Blust) > Basai *bukəs,* Pazeh *bukəs, bakus, vukkus,* Aklanon-Bisayan *buhúk,* Tagalog *buhók,* Kiput *suək,* etc. (ABVD, Dahl 29, 55)

§ Bengtson (1997a). Hayes (Austric Glossary) notes "Blust has revised the [AN] proto-form to *bukeS on the basis of Formosan evidence ... thus implying that *bukeS > *buSek > PMP *buhek. One must ask why metathesis had to occur in Malayo-Polynesian and not in Formosan."

hair (3):

- AA: MK: PBahnar **ʔəɲuːm* 'hair bun'; Katuic **ɲum / *ɲəɲum*[ə/o]*m* 'to tie hair' (Peyros) and / or Khmer *lóm* 'hair of body / of animal' (Hayes)
- Daic: Li **nom* 'head hair'; Laqua *ðam* id.; PHlai **nrom*
- Ainu **numa* 'hair', cf. (de Angelis) *xapa-numa* 'capelli della testa'

§ BB 40.

hair (4)

- MK: Munda: Gutob *jibbo, iŋgboː,* Remo *ugboñ,* Santali, Mundari *u'b* 'hair', Kurku *hup* 'hair, wool' (CM); MK: Bahnar *sɔːp* 'body hair', Chrau *chóp mãt* 'eyelash'
- AN **d'*[*aə*](*m*)*but* (Dempwolff) = **z*[*ae*](*m*)*but* (Lopez) 'hair' > Malay, Javanese *rambut,* etc.
- Ainu **sapa* 'head' (EHL; V reconstructs two synonyms **sa* and **pa* 'head'); cf. Sakhalin *šaba* (Klaproth 1823), (La Pérouse) *chapa* 'les cheveux'; or Ainu **EtOp* 'hair' > *otop* 'hair of the head' (Batchelor), Kuril *otop, otap* 'fur'

§ BB 41; S98 Bahnar + Ainu **EtOp.*

hand (1): PAustric **tVj* (EHL)

- Munda **tiʔ* (Pinnow): Bonda *titi,* Sora *siʔiːˌ* Mundari *ti,* Korku *tii;* MK **tiiʔ* (Shorto): PViet-Muong **t'ăy* 'arm, hand', Alak, Bahnar, Halang *ti,* Khmer *ṭaj,* Central Nicobar *tai,* etc. (V92, P96)
- AN: Formosan: Favorlang *tea* 'arm'
- Ainu **te*(-)*k* (V): Kamchatka *dēk,* Sakhalin *tegi* (Klaproth 1823), (La Pérouse) *tay* 'l'avant-bras'

§ BB 42, S98.

hand (2): PAustric **ʔlVma* (EHL), **l̥ema* (Hayes)

- Munda **monloi* '5' > Kurku *mono*(*i*), Parei *monloi,* Muwasi *maneiku* etc.
- AN **lima* 'five' / 'hand', cf. Formosan: Rukai **l̥ima* '5' : **alima* 'hand'
- Daic: PTai **mɯ* 'hand' (TLR); PKam-Sui **k-mya-*t id., SKelao *mle* 'hand' : *mlen* '5' (cf. Munda) (? < **mla*(*n*) < **lma*(*n*)); Laqua *mə* '5'; Gelao *mau* 'hand' : *bu* '5', Gao *mpau* : *mpu* id.
- Ainu **mOn* 'hand' (in compounds) (V), e.g. Sakhalin *mon-peh* 'finger', Kuril *mon-raj-gi* 'make'

§ BB 43. EHL compares instead PAA **ram* 'five'. Hayes (Austric Glossary) includes, e.g., Birhor, Mundari *rama* 'nail, claw'; Khmer *mrām* 'finger', etc.

head:

- Nihali (K) *peŋg,* (Bh) *pẽ̃y,* (M) *pyeŋ* 'head'
- AA: PAA **pVːŋ* 'head, above' (EHL): Khmer *tpuːŋ,* PBahnaric **piəŋ* 'above'
- AN: PAN **buŋuh* > Kanakanabu *nabúŋu,* Siraya *buŋu,* Central Amis *fuŋoh,* Tsou *fŋúu* 'head', etc. (ABVD)
- Ainu **pa* 'head' (< **pã* < **paŋ* ?)

§ NA 23. For loss of final velar nasal in Ainu, cf. **nose** and **road.** Alternatively, cf. BB 44, comparing Ainu *pa / pake* 'head' with Munda **bɔk(bɔk)* 'head', PBahnar **bo:k* id., PAN **buʔuk* id. Sidwell (S98) adds Chrau **kəmbo:ʔ* id.

heart:

- AA: Munda: Santali *rãwã* 'influence, sway, force, control, power of volition, constitution, quality, force of personality', Mundari *roa, rowa, rõã, rõw̃ã* 'soul, spirit',Ku. *rawan* 'spirit' (CM); MK: Waic **rmhom* 'heart, mind' > Kawa *hrom* etc. (Diffloth), SBahnar **pərá:m* 'entrails' (Efimov)
- AN **ɣuma* 'breast' (Capell) = **Ruma* > Timor: Tugun *'ruman* 'liver', Aputai *'rumaŋ,* Imroing *ra'mɛlmu,* etc. (ABVD); Formosan: Sediq *rúmul,* Puyuma *rami* 'liver'
- Ainu **rAm* 'soul, heart, mind, feelings, think' (V), cf. (La Pérouse) *tchame* 'le devant et le haut de la poitrine' (Naert 1961)

§ BB 69; V92; Hayes (1996) Ai + AN.

horn (1):

- AA: MK: Bahnar *ʔəke:,* Didra *ki:,* Bru *ki:* 'horn' (S98)
- Daic: PTai **khəu;* PKam-Sui **m-kwaau,* PBuyang **kr-*'horn' (N98)
- Ainu **ki(=)(raqu)* (V) > (Hokkaido) *kirau, kirawe* 'horn'

§ N98, S98.

horn (2):

- AA: Munda: Bonda *ḍeruŋ,* Sora *dére:ŋ,* Mundari *diṛiŋ;* MK: PWa **rɤŋ,* PMonic **draŋ,* PMon **krɛgaŋ* 'horn'
- AN: PHespero-Formosan **uReŋ* 'horn'
- Ainu **(ki)(=)raqu* (V) > (Hokkaido) *kirau, kirawe* 'horn'

§ V92, P96, N98.

hot:

- Nihali (Bh) *cacŭko* 'hot', *cacakkama-* 'to heat', (M) *čačuko* 'hot', *čačakāmā* 'to heat'
- AN: PAN **segseg* 'to burn'; Eastern Oceanic **saka* 'hot'; (Micronesian) Kusaie *isihk,* Ponapean *isik* 'to burn' (ABVD)
- Ainu **sEEsEk* (V) '(to be, to grow) hot' > *sesek, seisek, shesek* (Batchelor), Kuril *sesik* 'warm', *sesikva* 'hot'

§ NA 5.

I / me (1): PAustric **kVw* (EHL), **(a)(n)qu* (Hayes)

- ? Nihali (Bh) *jō,* (M) *jó* 'I'
- AA: MK: PViet-Muong **kwa* 'we, I' (S98); Katu *ku* 'I', Pacoh *ki:*, Bru *nka'*; ? Nicobar: Central *cü-ə, cuu-ö*; Khasi *ŋa* 'I'
- MY: Biao *kəu*; Hmong *ko,* EMiao **k*[õ]
- AN: PAN **aku* 'I'; **('u-)aku* / **'i-aku* (Benedict) > Pazeh *yako,* Javanese *aku,* Tagalog *akó,* Tahitian *au, vau,* etc. (ABVD)+
- Daic: PTai **ku,* PSWTai **ku* ~**kaw* 'I' (TLR); Laqua *khəu*; Gelao *yah*
- Ainu: PAi **ku* (V)

§ BB 1, S98. Hayes (Austric Glossary) subsumes **I / me (1)** and **I / me (2)** under the same etymon: **(a)(n)qu.*

I / me (2):

- Nihali (K) *hiŋgē* 'mine'; (Bh) *eŋ-* 'me', *eŋ-g-e-n* 'me' (acc.), *eŋ-g-e, eŋ-g-a* 'my, mine' (poss.), *eŋ-g-ke* 'to me' (dat.), etc. (1st person singular oblique)
- Munda: Kharia *iñ, iŋ,* Mundari *iñ, iŋ, aiŋ,* Korku *iŋ* 'I' (CM); MK: Khmer *aṅ* 'I', Mon *ʔay* 'I', Bahnar *ʔiñ,* Semai *ʔɛñ,* etc., Wa *ʔaʔ* 'we' (V92, P96, S98)
- AN: Sundic: Sundanese *aiŋ* 'I' (Kuiper 1948: 374); cf. Formosan: Favorlang *ina* 'I', Babar: Dai *'ai* id., Meso-Melanesian: Nissan *iŋo,* Tai'of *aiŋa,* etc. (ABVD)
- Ainu **an* 'me' (V 79: "Ainu folklore texts use this pronoun intsead of **ku*="), *en* id. (Batchelor); *in-* '1st person objective prefix'; **en-* 'I, me' (1 p. sing. transitive, accusative) (Itabashi 1998: 88)

§ BB 2, S98. Kuiper (1966:74) ascribes Nihali *eŋge* to Dravidian origin. However, Pinnow (1966: 189) thinks Nihali "*eŋ,* the oblique of *joo* 'I' is clearly related to Munda *iŋ*" (as a genetic cognate, not borrowing).

leaf (1):

- Nihali (Bh,M) *cokob* 'leaf (of a tree); clan name'
- AA: Munda: Santali, Mundari, Korwa *sakam* 'leaf' (CM); MK: Katu *aso'q* 'leaf'

§ Bengtson (1997a).

leaf (2):

- AA: Munda: Sora *ɔla,* Gutob *o:la:, volla:,* Kharia *ulaʔ,* etc. 'leaf' (CM); Bahnar *hla:,* Mon *sla* 'leaf' (S98); Katu *lah lang* 'leaf', Vietnamese *lá,* Pacoh *pláh* 'sheet, leaf', (AG)
- Ainu **hrA* 'leaf' (V) > *ham* 'leaf', *hap* 'leaves' (Batchelor), Kuril *yam* 'leaf', etc.

§ V92, S98.

louse (1): PAustric **ʔcVʔj* (EHL)

- Nihali (M) *cilar-ṭa* 'head lice, body lice'
- PAA **cai* or **cäi ?* (Vovin): Munda: Sora *iʔi:,* Kharia *sɛʔ,* Santali *se,* Mundari, Ho, Korku *si*-ku (CM); MK: Vietnamese *chí,* Alak *tśei*, Mon *cay,* Khmer *caj,* Bahnar *śi,* Khasi *ksi,* etc.
- Ainu **ki* 'louse' (V)

§ V92, P96, S98. Ainu only belongs if velar is original, i.e., **ki* > **ci-*.

louse (2):

- Nihali (Bh) *kepa,* (M) *kepā,* (pl. *kep-ṭa*) 'louse'
- AN: ? Meso-Melanesian: Madak larat-*kap* 'louse', Madak (Lamasong dialect) *gap* id. (ABVD)
- Ainu (Hokkaido) *kapo* 'nits' (Batchelor)

§ NA 13.

lungs:

- AA: Munda: Sora *bərɔ* 'lungs', Gorum *burob* 'lung, heart', Remo *buru', buruk'* 'lung, heart' (pl. *burug-le*), Gutob *buroʔ* 'heart' (Hayes 1996, CM)
- AN: PAN **baRaq* 'lungs' > Formosan: Kanakanabu *varáʔə,* Ami *valaq,* Pazeh *baraʔ,* Sediq *balaq,* etc.; MP: Madurese *bhárá,* Tagalog *bá:gaʔ,* etc. (Dahl 64, 111)
- Ainu: Kamchatka *bāgāk* 'lungs' (Klaproth 1823, p. 309)

§ BB 49.

man (1):

- Nihali (Bh) *ãʈho*, (M) *átho* 'husband'
- AA: Aslian: Mantra of Malacca *thou* 'husband', Sakai of Tanjong Sambutan *taú* 'male', Tembi Boy *ata-ú* 'husband'; Central Nicobar *otōhĕ (otāha)* 'husband', etc. (some < AN?)
- MY: PY **taw* 'classifier for people, animals (and certain objects: door, ax, key)' 'app. by extension from 'animal beings' (and certain objects so conceived)' (AT 336)
- AN: PAN **Cau,* PMP **tau* 'person, human being' > Paiwan *tsau-tsau,* Pazeh *sáu,* Puyuma *atou,* Bikol *tawo,* Bolaang Mongondow *intau,* etc. (Maori *tangata,* Hawaiian *kanaka* < **tau-mataq*) (ABVD)
- PTai **taw* 'child' (Lao), "app. by semantic extension from 'person'" (AT 335)
- Ainu *enčiu* 'man' (in prayer and folklore) < **entiu*

§ NA 2, Blažek (1996).

man (2): PAustric **quḷo* 'man' (Hayes)

- Nihali (M) *Kol-ṭa, Kal-ṭo* 'men, Nihals' (self-name), *Kal-ṭu-manḍi* 'Nihali language', *kol* 'wife, woman', (Bh) *kōl* 'woman, wife', *kal-ṭo* 'a Nahāl person'
- Munda: Kharia *kɑɽ, kʌɽ, kɔɽ* 'person, human being', Korku *korku, kurku* 'men, Korkus', *koro* 'man', Mowasi *koro*, pl. *korku*, Mundari *hɔɽɔ,* etc. 'man' (CM); MK: Khmer *kur* 'Bahnar or Sro'; Bahnar *khul* 'group, kind, type, race of people'; Asli: Besisi Sep. *kur* 'numerative for men', *mui kur mah* 'a single man'
- AN: PAN **hulun* 'male, man' (Dempwolff); cf. PMP **qulun* 'outsiders, alien people' (AG) > Bintulu, Katingan *ulun* 'person', Merina *ólona,* Punan Kelai *lun,* etc. (ABVD)
- Ainu **kur* 'man, person' (V), cf. Kamchatka *kūr* 'Mensch' = Sakhalin *guru* (Klaproth 1823), Kuril *kor-gur* (redupl.?) 'husband'

§ BB 50.

mountain:

- Nihali (M) *kurup* 'stone'
- AA: MK: Alak *gor*, Kaseng *gu̯r* 'mountain'; Sakai of Kerbu *gerbó:* 'hill, mountain', Tembi *ge:rbu* id.; Nyakur *kúr pədúər* 'mountain' (S98)
- AN: Oceanic **kor*(a,*o*) (Grace) = **gor*(a,*o*) (Milke) 'mountain'
- Ai *kuru* 'hill, mountain' and / or PAi **gur* id. (V) > (Hokkaido) *huru, furu,* Kuril *gur*, Saru, Yakumo *hur*(*-u*)

§ Bengtson (1997a); BB 51, S98.

neck:

- AA: Munda: Gutob *lugo* 'neck'; MK: Nicobar: Car *likun* 'neck, nape'; Asli: Semang (Begbie), Orang Benua *ŋot*, Pangan Ulu Aring *ŋud* 'neck' etc.; Riang (White Striped) *s'ʁkɔt* 'nape of neck', Nyakur *k'ɔ:-khút* 'neck'
- AN **likuḍ* (Dempwolff) = **likúDe* (Dyen & McFarland) 'back' > Formosan: Puyuma *rikuẓán* 'back', Thao *rikus,* Saaroa *likoso,* Saisiat *ikor,* Siraya *ricos;* PMP **likud* 'back' > Tagalog *likód,* Babuyan *dicod,* etc. (ABVD)
- Ainu **dekut* (EHL), *de*[-]*kut* (V) 'neck': Nairo *tekuh* id. vs. (Hokkaido) *rekutkoni* 'croup', *rekutumbe* 'necklace, yoke', (La Pérouse) *tchikot-ampé* id., *rekuči* 'throat', Kamchatka *rēkŭt*, Sakhalin *reguzy* 'neck' (Klaproth 1823)

§ BB 58; S98 Ai + Nyakur. Cf. PAustric **[li]ko(n)(z)* 'back' (Hayes).

night:

- Nihali (K) *mindī-dēwtā* 'moon' ('night-deity', Nihali + Indic), (Bh) *minḍi* 'evening, night', (M) *méndi* 'night'
- AA: Munda: Santali *ñindạ,* Mundari, Ho *nida* 'night', Remo *minḍip', mĩḍip', miṇḍip* 'evening, night', Gutob *minḍik* 'night' (CM); Aslian: Pangan *mendöi* 'last night'
- Ainu **mOn(=)rE* 'to be late at night'(V)

§ NA 18, Blažek (1996). Kuiper (1962: 75) ascribes Nihali *minḍi* to Dravidian origin.

nose: PAustric **ʒVŋ* (EHL)

- Nihali (Bh) *cōn* 'nose', (M) *cojona* 'nose', *cón* 'nose' (but also 'mouth' for some informants, per Mundlay), also *coʔon* 'nose' (Mundlay 1996b)
- MY: Miao *tsinyu* 'nose', Yao *(pu-)tsoN*
- AN: PAN **q₂íjúŋ* (Dyen & McFarland) > Kavalan *unung,* Squliq Atayal *idung,* Kerinci *idun, idew,* Malay *hidung,*Cebuano *ilóng,* Rotuman *isu,* Maori, Hawaiian *ihu,* etc. (ABVD)
- Daic: PTai **ʔdaŋ* (TLR); Ong Be *zoŋ;* PKam-Sui **ʔnaŋ* 'nose, face' (Thurgood)
- Ainu **Etu* (V): cf. (La Pérouse) *etou,* Kamchatka *āhdūm,* Sakhalin *idu* (Klaproth 1823)

§ AT 345, V92, BB 59, N98.

oil:

- AA: Munda: Santali, Ho, Birhor, Korwa *sunum,* Mundari *sunum, sunuŋ* 'oil' (CM); MK: Asli: Central Senoi *sĕnûm*, Orang Tanjong *sinum* id.
- AN: PPolynesian **sinu* 'oil, grease' > East Futuna *sinu/sinu,* Luangiua *suŋu, sunu,* Tuamotu, Maori *hinu* 'fat, grease, oil', etc.
- Ainu **sum* 'oil (as food)' (V) > *shum* 'oil, fat, scum' (Batchelor), etc.

§ BB 60. Kuiper (1966: 64) notes Tibetan *snum* 'fat, grease, oil', apparently borrowed from Austric.

one (1):

- Nihali (K) *caini* 'before' (location), (Bh) *ceyni* 'previously', (M) *cayni* (numeral) 'first', *céyni* 'first, previously'
- Munda **sɛŋ* 'first, before' (P 102); MK: Khasi *ši* '1'; Palaung *se* 'one' in compounds; Asli: Besisi Malacca *ciaŋ* 'first, in front', Semang Paya *ka'-seŋ* 'first, formerly';MK: Khasi *ši:* 'one'
- AN: PAN **esa* '1' > Formosan: Central Amis *cecai, cecaj, ccaj,* Kavalan *ʔissái*, Pazeh *ʔażáŋ, ʔižát,* Puyuma *ʔisáʔ*; PMP **isa* > Tagalog *isá,* etc.; cf. Formosan: Kanakanabu *cáni,* Saaroa *ucani,* Tsou *cíni* (ABVD)
- Daic **tsia* > Li **tsï*; Laqua *tiə*, Pupeo *cya*, Gelao *si*, Thü *tsi* '1'
- Ainu: PAi **si-ne* '1' (V) with suf. *-ne* as in (B) *i-ne* '4', *tak-ne* 'short', *kun-ne* 'black', cf. *išine* 'conjointly, together', *ašiu / ašui / arašuine* 'once'; (La Pérouse) *tchiné*, (de Angelis) *xine-ppú,* Kamchatka *syhnäp*, Sakhalin *šnepf*, Hokkaido *senezb*, *zinezf* '1' (Klaproth 1823)

§ AT 188, BB9, S98.

one (2):

- Nihali (Bh) *biḍi,* (M) *biḍiko, biḍik, biḍi, beḍe, baḍa* 'one'
- Ainu **patEk* (V) 'only' > *patek* (Batchelor, and all dialects)

§ NA 3.

organ: PAustric **(pu)su* 'heart' (EHL), **pu(t)šuq* (Hayes)

- MK: PViet-Muong **pso:s* 'lungs'; Khmer *p'oit*; Khasi *sohpet* 'navel'
- AN **put'uʔ* 'heart, bud' (Dempwolff) = **pusˌuq* 'lungs, heart' (Dyen & McFarland)
- Daic: PTai **pɔ/ɯɔt,* PSWTai **pɔɔt* 'lung' (TLR)
- Ainu **pisE* 'stomach' (V) > (Hokkaido) *pise* 'bladder', *pišoi* 'belly of a fish', Kamchatka *psēh* 'stomach', Sakhalin *pši* (Klaproth 1823)

§ AT 312, BB 71.

road:

- MK: PMon **trəw* 'way, road', Khmer *phlo:v* and / or PBahnaric **tərɔ:ŋ* ~ **təru:ŋ* 'road, path'; PMonic **glɔɔŋ*; Vietnamese *đường* 'road'
- Daic: PTai **dl/r[u]ŋ* 'lane, valley' (N98)
- Ainu **truu* (V) > Yakumo, Saru *ru*, Raichiska *ruu*, Nairo *tuu*, *tru, ru*, Kuril *tojru, tru,* etc.

§ BB 65; V92, N98, S98. Sino-Tibetan **rōŋ* 'road', may be of substratal, i.e. MK origin ?.

root: PAustric **ʔrEʒ* (EHL)

- AA: Munda: Santali *rɛhɛ'd,* Mundari *re:'d,* Sora *je'eḍ* 'root' (CM); MK: Waic **rɛs* 'root'; Khmer *ris*; Mon *ruih*; PKatuic **rɨejh*; Bahnar *rəh*, Sre *rias*, Stieng *rĭěh,* etc. < PBahnaric **riəh*; PViet-Muong **re:lh* > Vietnamese *rễ*
- AN **ʔuyat* (Dempwolff) = **H_2uyat$_2$* (Dahl) 'blood vessel, vein, sinew, tendon' > Formosan: Kanakanabu *urátsə,* Puyuma *oraṭ* 'blood vessel', etc.; PMP **uRat* 'root' > Iban, Maloh *urat,* Dayak Ngaju *uhat,* Tagalog *ugát,* etc. (ABVD, Dahl 19)
- Ainu **rit* 'root' > *shin-rit* 'roots of plants, ancestors', *kem-rit* 'blood vessel' (Batchelor), Kuril *ryt* 'tendons', etc.

§ BB 66, S98; V92 Ainu + MK. Peiros (EHL) compares instead PAN **waRej* 'vine, creeper, root'.

sand:

- AA: Munda: Kurku *ote*, *wate*, Mundari *ɔtɛ, ɔte,* Santali *ɔt,* Ho, Kurku *ote,* etc. 'earth, ground' (CM); MK: PMon **həti̲* 'sand' (S98)
- Daic: Thai *hàat* 'sand bank, rapids'< PTai **hat* (TLR)
- Ainu **Ota* 'sand' (V) > Hokkaido *òtá,* Kuril *ota, otà,* etc.

§ V92, S98 compared Ainu + PMon.

skin (1):

- Nihali **-kap-* '*skin' in (Bh) *jiki-kap-ri* 'eyebrow', (M) *jiki-kāp-ri* 'eyelid' (where *–ri* is a personalizer suffix)
- MK: Stieng *kup*, *kuo:p* 'skin, bark'; Asli: Sakai (Sungai Raya) *tšì-kop* 'bark', (C) 'skin', Jakun *tšun-kop* 'skin'
- AN: SFormosan **kaba* > Kanakanabu *káva* 'skin', Paiwan *kava* '(skin-)clothing'; cf.
- Daic: PSWTai **kaap* 'husk, sheath (of plants)' (TLR)
- Ainu **kAp* 'skin, fur' (V), cf. (Hokkaido) *kapu* 'skin, bark', *šik-kap* 'eyelid', Sakhalin *kapu* 'Haut' (Klaproth 1823)

§ BB 67, V92, S98. Ainu > (or < ?) Old Japanese *kaFa* 'skin, hide / fur'.

skin (2):

- AA: MK: Jeh *kədu:h* 'bark', Ruc *kəduh* id., Chrau *ntoh,* Rongao *kdoh,* Bahnar *kadoʔ,* etc. 'bark' (S98)

- Ainu **dus* 'skin, fur' (V) > *rush* 'skins of animals' (Batchelor), Nairo *tus* 'fur, skin', etc.

§ S98.

skin (3):

- AA: Munda: Santali *ur* 'to peel off, flay, to skin', Mundari *uṛ* 'bark of a tree', *ur* 'leather, hide, skin', Ho *ur* 'skin' (CM); MK: Riang *hu:r* 'skin'
- Ainu **ur* 'fur coat' (V) > *uru* 'skin, skin of animals, hair of the body', Kuril *ur* 'clothes made from the skin of a young reindeer', etc.

§ BB 68.

sky:

- Nihali (K) *lēgē* 'up'
- AA: Munda: Korku *le:n* 'above, upon', Sora *lanka:-n* 'above', *rąŋge* 'air', *leŋ.leŋ* 'very high, inaccessible', *bəleŋ* 'roof', Juang *aliŋ* 'top' (CM); MK: Khmer *lĭŋ* 'monter, s'élever, gravir', PBahnaric **le:ŋ* 'sky'; Palaung *ple:ŋ*, etc. (AG)
- AN: PAN **laŋiC* 'sky' > Formosan: Saaroa *laŋica*, Puyuma *ranget;* PMP **laŋit* > Merina *lánitra,* Tagalog *láŋit,* Malay *langit,* Hainan Cham *ŋi?*, etc.; PEast Oceanic **laŋi* 'up' > Maori *rangi,* Hawaiian *lani* 'day, heaven, sky', etc. (ABVD, Dahl 108-113)
- Ainu **nis* 'sky, cloud' (V) > *nish* 'clouds, heavens, air, sky' (Batchelor)

§ Bengtson (1997a); N98. Shafer (1940) compared Nihali + Munda.

sleep:

- AA: Bahnar *po:* 'to dream', Vietnamese *mó* id.
- MY: PMY **pwəi (*pwə^{2}i^{2})*> PMiao **pɨ* 'to sleep' (Kosaka 2002: 85)
- AN: PRemote Oceanic **m^{w}oe* 'to sleep' > Samoan, Tahitian, Maori, Hawaiian *moe,* Fijian *moce,* etc. (ABVD)
- Ainu **mO* 'sleep' (V) > *mo*-koro 'to sleep' (Batchelor), Kuril *mo*-kooro 'to sleep', *mo*-so 'to wake up', etc.

§ V92, S98 Ainu + MK.

snake:

- Nihali (Bh) *kōgo,* (M) *kógo* 'snake'
- Ainu (Hokkaido) *okokko* 'snake' (Batchelor)

§ NA 15. The more usual Ainu words for snake are **Oyaqu and *tOkkOni* (Vovin 1993: 122, 146).

stone (1):

- PAA **θoma* or **θamu* (Vovin), **tamu(q)* (Hayes): MK: PWa **smo'*, Mapä, Umpai *samo,* PMonic **tmɔɔ'*, Bahnar *təmo:,* Khmer *thma, thəmo:,* etc. 'stone'
- Ainu **suma* (V) 'stone' > *shuma* (Batchelor),

§ V92, P96, S98. Hayes (Austric Glossary) subsumes **stone (1)** and **stone (2)** under the same entry: PAA **tamu(q)* = PMP **batu.*

stone (2):

- AN **batu?* 'stone' (Dempwolff): Siraya *wattu,* Malay *batu,* Hainan Cham *taw,* Cebuano *bató,* Malagasy *váto,* Maori *whatu,* etc. 'stone' (ABVD, Dahl 47)
- Daic: PTai **pat* 'gem, grains of glass, glass pearls, pearl' > Thai *pàt* 'glass beads'; Laqua *pə* 'stone'; Dioi *lək pat* 'pupil of the eye' (*lək* is the classifier for spherical objects) (AT 398)
- Ainu (Hokkaido) *pit* 'small stone, flint' (Batchelor)

§ BB 72. For Dioi 'pupil of the eye', cf. Maori *whatu* 'pupil of the eye, eye' (among other meanings: Biggs [1990]).

stone (3):

- Nihali (Bh) *cago,* (M) *čágo* 'stone'
- AA: Munda: Mundari *ciḍgi* 'stone' (Bh); Aslian: Besisi *ch'ogn, chong* 'hill', Serting *ch'hogn* 'mountain', etc.

§ Blažek (1996).

sun:

- Munda: Kharia *tum'bɔ'* 'day, 12 hours', Sora *'tamba:* 'to be forenoon', *'tamba:-'togal* 'day and night'; MK: Nicobar: Car *tawuui / tawe* 'sun' (Das).
- Ainu: (Hokkaido) *tombe* 'sun' or 'moon' (Batchelor)

§ BB 73.

tail (1):

- Nihali (Bh) *pago,* (M) *págo* 'tail'
- AN: Ci'uli Atayal *bokwi?*, Sediq *búkwi?*, Pazeh *bukún,* Tsou *f?uhu* 'back' (ABVD); POceanic **mpuku* > Fijian *mbuku* 'pointed hind-end, tail' (AT 230)

§ Bengtson (1997a).

tail (2):

- Munda: Santali *caṇḍlɔm,* Mundari *calɔm, ca'dlɔm, ca'lɔm,* Ho *calom,* etc. (CM); MK: Kui *sạ:l* 'tail'
- Ainu **sAr* 'tail' (V) > *sara, saraha* (Batchelor), Nairo *sar,* etc.

§ S98 MK + Ainu.

this / that:

- Munda: Korku *dee* 'that'; MK: PMonic **tɛɛ'* id., Pacoh *do* 'he, she, it' (V92, P96); Nyakur *té'* 'that' (S98)
- MY: Miao *to* 'that'
- AN: PAN **ati* 'that', **-tu* 'this'; PMalayo-Polynesian **i=tu* 'that (near speaker)' (N98)
- Daic: Lakkia *tu* 'they', Laqua *to* id., Ban-Phung *a-to* 'this'
- Anui **ta* 'this', **tO* 'that' (V) > *ta, tan, tam, taka* 'this', *toan* 'that' (Batchelor)

§ BB 8. Of course, demonstratives in *T- are very extensive in other macrofamilies.

thou:

- AA: MK: Halang, Kaseng *ai,* Sré *?ai/* (fem.) (V92); Bahnar *?ɛ:,* Semai *hɛ:?* (S98)
- Ainu **E* 'thou' (V) > *e=, e=ani* (Batchelor), Kuril *e, ane, a(a)ni,* etc.

§ N98, BB6. N98 compares also: PAN **i=kaSu,* PHespero-Formosan **i-Su;* Daic: PTai **su.*

tie (1):

- Nihali (Bh) *bokki-* 'to tie something', (M) *bokki* 'to construct, to tie something, bind'
- AN: PAN **bekes, *buŋkus* 'bundle'; Formosan: Siraya *vugot* 'to bind'; Tagalog *bigkis* 'bundle, waistband, bound, to tie', etc. (AT 410)

§ Bengtson (1997a).

tie (2):

- AA: Munda: Sora ji-*kud-* 'tie into a knot'; MK: PSouth Bahnaric **kət* 'to tie', Sedang *kat* 'tie up', Pearic *khɔ:t* to tie', Vietnamese *cột* 'tie up, chain' (AG)
- AN: PMP **hiket* 'to tie up, fasten' > Malay *meng-ikat,* Hanunóo *higút,* Bintulu *miket,* Maranao *iket,* etc. (ABVD)
- Ainu **köt=* 'to tie (it) to' (V) > *kote* 'to tie up with anything, to tie on to', etc.

§ V92 Ainu + MK.

tongue: PAustric **lVñ* 'tongue'(EHL)

- Nihali (K) *laŋg,* (Bh) *lãy,* (M) *laiñ* 'tongue'
- AA: Munda: Bonda *le'aŋ,* Sora *lá:ŋ, la'aŋ,* Mundari, Santali *alaŋ,* Korku *lan, laŋ* (P96); Mon *kla:n* 'to lick', Bahnar *liah* 'taste, lick', Brou *liaih* 'tongue', Vietnamese *lưỡi* id., etc. (AG)
- AN: Formosan: Kavalan *lilám,* Basai *lilam,* etc. 'tongue' (ABVD)
- Daic: PTai **lin* 'tongue' (TLR)

tooth (1): PAustric **ŋVk* (EHL) 'tooth'; cf. PAustric **maq* 'to chew' (Hayes)

- Nihali (K) *mēŋgē* 'tooth', (Bh) *menge* 'tooth, jaw', (M) *ménge* 'tooth, teeth'
- MK: Mon *ŋek* 'tooth' (P96, not accepting cognacy of Nihali + Mon); Khmu *mah* 'to eat', Katu *mamah* 'to chew' and / or Khmer *ŋiəŋ* 'barb', Niakuol of Petchaben *ŋiek* 'tooth'
- AN: PMP **mamaq* 'to chew' > Javanese *mamah,* Hawaiian *mama,* etc.; cf. POceanic **maka(s)* 'tooth' (Saliba *mwaka*), **maŋa* 'mouth' > Ghari *maŋa-,* Kokota *maŋa*-na, Maori *maangai* 'mouth' (ABVD)
- Daic: PSouthTai **(h)ma*(a)*k* > Ahom *mak* 'chew the cud'; PKam-Sui **hma:k* 'chew' (Thurgood); PTai **hŋɯak* 'gum (tooth); palate; gills' (TLR)
- Ainu **ima*(-)*k* (V) 'tooth', cf. (La Pérouse) *yma,* Kamchatka *imak*, Sakhalin *nimaki* (= **nii* 'tooth' + **imak-* id.), Hokkaido *mimak* (Klaproth 1823)

§ NA 19; BB 74. Cf. also PAustric **moŋ* 'mouth' (Hayes). This proto-etymology should probably eventually be split into two or more new etymologies.

tooth (2): PAustric **gis* (Hayes), with infixes **g[a]nis*

- AA: Munda: Gutob *gi:ne* 'tooth, molar', Remo *gine* 'tooth', kisa=*gine* 'canine teeth, tusk', Kharia *gɔnɛ* 'tooth', Gta' *gi, gini* id. (CM); MK: PMonic **gnis* 'canine tooth', Khmer /khnae/ 'tusk, spur', etc.
- AN: Malay *genih* 'tusks of a female elephant' (Kuiper 1948: 377); cf. PAN *gigih* 'tooth' (Dempwolff) > Malay, Makassar *gigi,* Kerinci *gigi, gigoy,* etc. (ABVD)
- Ainu **nii* 'tooth' (V) > *ni-maki* 'tooth' (see **tooth [1]**), *ni-rush* 'gums' ('tooth-skin') (Batchelor)

§ V92, S98; cf. N98. Alternatively, Ainu **nii* could be compared with PAN **ŋis* 'to bare the teeth' > Old Javanese *iŋis* 'bared, visible (teeth, etc.), bare the teeth, grin, smile', etc. (ART 132); or, following N98, cf. PMP **ipen, *lipen, *nipen, *ŋipen* 'tooth', PAA **ləmpəŋi* id., etc. (See Hayes, Austric Glossary: TOOTH 2.)

tree (1):

- Nihali (Bh) *arḍu, aḍḍo,* (M) *aḍḍo* 'tree'
- AA: Munda: Parengi *ara* 'tree' (Bh), Sora *əra* 'timber tree, wood' (CM, Kuiper 1966); MK: Bru *aruih* 'woods' (Thomas 1966: 199)

§ Bengtson (1997a).

tree (2): PAustric **kax(e)u* (Hayes)

- MK: Palaung-Wa: Umpai, Bo Luang, Mape *khe* 'wood' : *kho* 'tree'; PViet-Muong **kuy* 'firewood'; Nicobar *chīa* 'tree, wood'
- AN **kaju?* (Dempwolff) = **káS₂iu?e* (Dyen & McFarland) 'tree' > Paiwan *kasiw,* Pazeh *kahuy* 'tree, wood', Siraya *caiou,* Tagalog *kahoy,* Malay *kaju,* etc. (ABVD, Dahl 35, 46, 120)
- Ainu *kaja* 'pays montagneux, montagnes'

§ BB 54. Cf. Old Japanese *kë* 'tree' < Austric substratum.

two (1): PAustric **zuwas* (Hayes)

- AA: Munda: Sora *ruɑ:-n* 'together, along, at one and the same time'; MK: Bahnar *adoi, hòdoi, hòdai* 'together', Pacoh *tŏi* 'pair', Vietnamese *dôi* id.
- AN **ḍuva'* (Dempwolff) = **DəwS₃a* (Dyen & McFarland) > Formosan: Kavalan *rusá?,* Siraya *rauha, duha,* Kanakanabu *cúsa,* Tsou *ruso,* etc.; PMP **duha* > Cebuano *duhá,* Malay *dua,* Maori *rua,* Hawaiian *lua,* etc. (ABVD, Dahl 30, 46)
- Daic: Li **draw* = **ɻau* (Theraphan); Laqua *ðe*; NKelao *so*; Lati *su / fu* '2'; cf. PTai **dra:w* '20'
- Ainu: PAi **tuu* '2' (V), cf. (Batchelor) *tup* 'two things', ? *ru* 'half, partly'; (de Angelis) *tzu-ppù, tou* [*tu*] (La Pérouse); Kamchatka *dūpk,* Sakhalin *tup,* Hokkaido *zuzb, zuzf* '2' (Klaproth 1823)

§ AT 188, V92, BB 10.

two (2): PAustric **ʔaʔli* (EHL), **qar, *(n)qampar* (Hayes)

- PAA **ʔa:r* (EHL): Munda **[u]bar* '2' (Pinnow); MK: Khasi *a:r*; Lemet *ar*, Palaung *a(r);* Khmer *bir*, Mon *'ba,* Samre *paar*, PBahnar **'ba,* PKatuic **'bə:r,* SKhmu, Lawen *baar* '2'; Vietnamese *bay* 'pair', Asli: Serau *maar, naar* etc., Che' Wong *ber*
- MY **(a)war / *(ə)wər* '2'
- AN **ke(m)bar* 'twins' (Lopez); cf. PAN **pali* 'side, half' (EHL)
- Daic: Mak *wa*, Ong-Be *vən* 'twin'
- Ainu **oar > ara* one of the pair, side', *arake / arage* 'half', *oara* 'one of a pair, one of two'

§ BB11.

water (1): PAustric **nVm* (EHL), **[ʔ]om, *(d)zom, *zalom* (Hayes)

- Munda: Sora *ñum-ən* 'urine'; MK: Khmer *nom*, Mon *nam*, Talaing *ñam* 'to water', Bahnar *num*, SBahnar **'nno:m* id. (Efimov); Asli: Sakai *kenám, nɔm* 'urine' etc.
- MY: Yao **ʔnam* 'cold of water' (Chang)
- AN: PAN **daNum* (fresh) water' > Formosan: Thao *θá:ðum,* Pazeh *dalúm,* Kavalan *ranúm, za:núm,* Central Amis *nanum,* Paiwan *zaɬum,* etc.; Western MP: Chamorro *hanom,* Malagasy *ráno,* Palauan *ralm*; Oceanic: Kiribati *ran, ræn,* Manam *daŋ,* etc. (ABVD, Dahl 97, 102)
- Daic: PTai **nl/ram* 'water' > Thai *náam* (TLR); PKam-Sui **ñam*-ti (Thurgood); Lakkia *num*; Ong-Be *nam*; Li **nom* etc. 'water'
- Ainu (Hokkaido) *nam* 'fresh or cool (as fresh water), cold as water or one's feet hands', *nam wakka* 'fresh or cool water' (Batchelor)

§ BB 78. Norquest (p.c.) suggests that the Daic words are better compared with PAN **tənəm* 'ocean'.

water (2):

- AA: Munda: Kharia *oaʔ, uaʔ, uwaʔ* 'to bathe, to wash one's body, to swim', Juang *uag-, uaŋ-* 'to bathe' (CM); MK: Asli: Semaq Beri *la'wak* 'river' (Hayes) and / or Sakai of Pulai Guai *wök*, Sakai of Krau *wö*, Semang Paya *uoh* 'to drink' etc.; Khmer *uak*, Ksinmul *'uk* id. (Sidwell [1998] compares the last two forms with Ainu **kuu* 'to drink')
- AN **wayəγ* (Dempwolff) = **wahiR*$_{123}$ (Dyen & McFarland) 'water' > Manobo *'wɨhig, wayig,* Koiwai (Irian Jaya) *wálar,* Malay *air,* Maori, Hawaiian *wai,* Samoan *vai,* etc. (ABVD)
- Daic: Proto-Southwest Tai **wak* 'to scoop out water' > Thai *wak* (TLR)
- Ainu **wakka* (EHL): (La Pérouse) *oouachka* = (Hokkaido) *wacha, wazka,* (Sakhalin) *waka* (Klaproth 1823) 'water' (? *wakka / wahka / wazka* < **waʒka* < **wayka*)

§ BB 77. Cf. **drink.** Vovin (1993) reconstructs Proto-Ainu **hdak-ka* and compares it with Austric **ḍak* 'water' (Munda, Mon-Khmer). Likewise Sidwell (1998).

water (3):

- AA: MK: Bahnar *bah* 'Mündung eines Flusses', Khmer *anwāḥ* 'kleiner Bach, Kanal' (Schmidt 1906, p. 155) or perhaps better PViet-Muong **pe* 'sea' (Thompson)
- AN **baʔah* (Dempwolff) = **baháq* (Dyen & McFarland) 'food, water' etc.
- Daic: PTai **ʔba* 'overflow, spill' (AT 349)
- Ainu **pE* 'water, sap' (V), cf. *pen* 'source', *pene* 'fine rain; aqueous, watery' etc. (Batchelor), Kamchatka *pìh* 'water' (Klaproth 1823)

§ BB 79.

water (4):

- Nihali (Bh) *jappo, joppo,* (M) *joppo* 'water'
- AA: Munda: Santali, Mundari *jɔbɛ* 'to get wet', Korwa *jɔbɛ* 'wet' (CM); MK: PKatuic **ʔjip* 'wet' (Peiros)
- Daic: PTai **jup* 'to dip into (water)' > Thai *c^{h}úp* (TLR)

§ Bengtson (1997a).

we / us (1):

- Nihali (Bh) *ṭyē-ko, ṭē-ku,* (M) *té-ko* 'we (two)'(dual)
- MK: Vietnamese (arrogant) *ta* 'I', *chúng ta* 'we' Muong *tan'ha* 'we'
- AN: PAN **(ki-)ta* 'we' (inclusive); Western Fijian **ti* 'we' (incl., trial, present/future), **tu* 'we' (incl., trial, non-time/past); cf. Tahitian, Maori *taaua* 'we' (dual inclusive), *taatou* 'we' (plural inclusive)
- Daic: PTai **tu* 'we' (excl.) (TLR), Mak *di* 'we' (excl.) / *da* (incl.), Lakkia *ta / tau* id.; PKam-Sui **trau* 'we' (incl.)
- Ainu **ti=* 'we' (realized as /či/ in all dialects) (V)

§ NA 25; BB 3.

we / us (2):

- Nihali (Bh) *māney,* (M) *manê* 'we' (pl.)
- AA: Munda **bɨ(n)* 'we' (incl.); MK: SBahnar **bɔ$_{l}$:n* 'we' (incl.), NBahnar **(ʔ)bɛ̀n* < PBahnar **bə(:)n* 'we' (incl.)
- ? PMY **(m)pua* 'we'

- AN: PAN **(ka-)mi* 'we' (exclusive); PPhilippine **mami* 'we'(excl.), POceanic **-mami* 'our' (excl.), **mêy* 'we' (Itabashi 1998:88-89); Maori, Tahitian *maaua* 'we' (dual excl.), *maatou* 'we' (pl. excl.)
- Ainu **un* 'we, us' (transitive, accusative) (Itabashi 1998: 88): *e.g.*, *un kore* 'give it to us', *un ahaigekara nisa* 'he slandered us' (Batchelor)

§ NA 17; BB 5. All the forms are derivable from **bVn-*, the AN forms < **mani* (cf. Nihali *manê*) < **bani*, or the like.

what: PAustric **nVw* 'what, who' (EHL)

- Nihali (K) *nānko*, (Bh) *nān, nāŋ*, (M) *nānā* 'what'
- MK: Mon *nu* 'what', Vietnamese *nào* 'what?, which?, every, some, what(ever), any, whichever' (P96, AG)
- AN: PAN **n-anu* 'what' > Squliq Atayal *nanuʔ*, Sediq *mánuʔ*, Punan Kelai *non*, Tagalog *anó*, etc. (ABVD)
- Ainu **nEE=* 'who, what': Hokkaido *nen, neni* 'who', *nep* 'what' (Batchelor)

§ This and **who (2)** are probably the same etymon. Kuiper (1966) ascribes Nihali *nān, nāŋ* to Dravidian origin.

where:

- Nihali (Bh) *miŋgay*, (M) *mingā* 'where'
- AA: Aslian: Jakun *ming, mĕnung* 'where'
- AN: Dobuan *mane*, Maisin *man, manke*, Molima *maina*, Ubir *menan* 'where' (all located on Papua)

§ Blažek (1996).

white:

- AA: Munda: Santali *tartaria* 'rein, klar'; Sora *ta'ar* 'to shine, be bright, bloom', *tar* 'white', Gadaba *ta-tār* 'white', Kharia *tardí* id.; MK: Bahnar *tār* 'leuchtendes Weiss'
- AN **tarah* 'clear' (Dempwolff).
- PAi **detara* (V) > Sakhalin *tedari*, Hokkaido *tetar* (Klaproth 1823), Yakumo, Asahigawa etc. *retar*, Raichiska, Naira *tetara* id.

§ BB 80; V92 Ainu + Munda + MK.

who (1): (PAustric **kU* 'what, how')

- MK: Khmer *'anakna* 'who'; cf. Nicobarese *kahä* 'what'; Munda *o-ko-e* 'who', *o-ka* 'what'
- AN: PAN **kuja* 'how' > Formosan: Puyuma *kuđayáu*; Oceanic: Nggela *gagua*, etc. (ABVD)
- Ainu **gu(n)na* 'who'

§ S98 compares MK and Ainu.

who (2):

- Nihali (Bh,M) *nāni* 'who'
- PAA **nVw* 'who': MK: Kui *nàː*, Katuic **naw*, Khmer *khəṇao* (S98)
- Ainu **nEE=* 'who, what': Hokkaido *nen, neni* 'who', *nep* 'what' (Batchelor)

§ Cf. **what.** S98 compares MK and Ainu. Kuiper (1966) ascribes Nihali *nāni* to Dravidian origin.

year:

- Daic: PTai **pi* 'year' (Li), PKam-Sui **mpe* (Thurgood), Ong-Be *'bei*, Li *'be*; Lakkia *pĕi*
- Ainu **paa* 'year, season, age' (V): Kamchatka *pāh*, Sakhalin *pa* (Klaproth 1823)

§ BB 82.

you (pl.):

- Nihali (Bh) *lā,* (M) *lá* 'you' (plural)
- Daic: Lakkia *liu* 'you' (pl.), Lao *lau* 'thou' (AT 207)

§ Bengtson (1997a).

Notes on Phonology (Nihali, Ainu)

Nihali often exhibits what might be very old Proto-Austric stem types, for example the type CVCVCV, where CVCVC or CVCCV is more common in other Austric languages, e.g. (see the etymology indicated in **bold** type for full details):

- N. *kuguso* : cf. Ainu *kiški* (< **kVsVkV ~ *kVkVsV* ?) **(hair)**
- N. *cacuko* : cf. PAN **segseg,* Ainu **sEEsEk* **(hot)**
- N. *cojona* : cf. PAN **q₂íjúŋ* **(nose)**
- N. *biḍiko* : cf. Ainu **patEk* **(one)**

In some other cases Nihali has the more common Austric (C)VCVC shape, in some of which Nihali has apparently lost the last consonant of the Proto-Austric stem:

:

- N. *kalen, kallen* : cf. Madurese *tellor* **(egg)**
- N. *cokob* : cf. Santali, Mundari, Korwa *sakam* **(leaf)**
- N. *kurup* : cf. Ainu *kuru* **(mountain)**
- N. *paḍa* : cf. PAN **paCay* **(die)**
- N. *āpo* : cf. PAN **Sapuy* **(fire)**
- N. *lēgē* : cf. PAN **laŋiS* **(sky)**

Ainu also exhibits some of the same Austric stem types, and their modifications. For CVCVC cf:

- A. **kisAr* : cf. Khasi *kaško:r* **(ear [2])**
- A. **apOy* : cf. PAN **Sapuy* **(fire)**
- A. Kamchatka *bāgãk* : cf. PAN **baRaq* **((lungs)**
- A. **dekut, rekut* : cf. PAN **likuD* **(neck)**

In several cases Ainu has elided the first syllable and preserved only the second syllable of the Proto-Austric stem, a process duplicated in other mainland Austric languages:

- A. **nOk* : cf. PAN **manuk* : Hainan Cham **nuʔ,* PY **nɔʔ* **(bird)**
- A. *ok* : cf. PAN **hauak* : Tai *òk* **(chest)**
- A. **day* : cf. PAN **maCay, *paCay* : PMY **day* **(die)**
- A. **rit* : cf. PAN **uRaC* : Khmer *ris* **(root)**
- A. **dus* : cf. Jeh *kədu:h* **(skin [2])**
- A. **nis* : cf. PAN **laŋiC* : Hainan Cham *ŋiʔ* **(sky)**
- A. **nii* : cf. Malay *genih* **(tooth [2])**
- A. *nam* : cf. PAN **daNum* : Thai *náam* **(water [1])**

In yet other cases Ainu has apparently preserved only the first syllable, or otherwise 'telescoped' the Proto-Austric form:

- A. **nOt* : cf. PAN **ŋu[t']uʔ* **(chin)**
- A. **sum* : cf. Mundari *sunum, sunuŋ* **(oil)**
- A. *pit* : cf. AN **batuʔ* **(stone [2])**

Proto-Austric **ŋ*: As pointed out by Norquest (1998) there is no dorsal nasal [ŋ] in Ainu. Apparently in initial position it changed to the coronal nasal [n], and in final position it was lost, possibly with an intermediate stage of nasalized vowel (*Vŋ > *V˜ > V), e.g.:

- A. **nOqi=pE* : cf. PTai **ŋ[ui]* **(brain, marrow)**
- A. **nOt* : cf. PAN **ŋu[t']uʔ* **(chin)**
- A. **nis* : cf. PAN **laŋiC* : Hainan Cham *ŋiʔ* **(sky)**
- A. **nii* : cf. PAN **ŋis* 'to bare the teeth' or PAN **ŋipen* 'tooth' ? **(tooth [2])**
- A. **kEqu* : cf. PKatuic **ŋhaaŋ*, PMY **tshuŋ*, PAN **CuqelaN* **(bone)**
- A. **pa* : cf. Nihali *peŋg, pẽ̃y, pyeŋ* **(head)**
- A. **(ki)(=)raqu* : cf. AN: PHespero-Formosan **uReŋ* **(horn [2])**
- A. **Etu* : cf. PAN **qəíjúŋ* **(nose)**
- A. **truu* : cf. PBahnaric **tərɔ:ŋ ~ *təru:ŋ* **(road)**

Ainu Kamchatka *āhdūm* 'nose' (Klaproth 1823) could represent the preservation of final [ŋ] > [m] in this sparsely recorded dialect.

Palatalization of Proto-Austric **k, *g ?* In a very few cases we find the opposition of Ainu velars to palatals in other Austric languages:

- Ainu **kemi* or **kEm* = PYao **džhyaam*, East Formosan **dzamu(ʔ)* **(blood)**
- Ainu **kEqu* = PMY **tshuŋ*, PAN **CuqelaN* **(bone)**
- Ainu **ki* = Nihali *cilar-ṭa* = PAA **cai / *cäi*: Kharia *sɛʔ*, Khmer *caj*, Bahnar *śi*, etc. **(louse)**

If these comparisons are historically valid, they would imply a very common kind of diachronic change, palatalization of velars, often precipitated by a following front vowel. (The opposite change, palatal to velar, is also possible, but less probable.) The Proto-Austric forms could thus be something like:

- PA **gem[u]* 'blood' > **giam[u]* > Formosan **dzamu(ʔ)*, PYao **džhyaam*, etc.
- PA **kequŋ* 'bone' > **tsequŋ* > **tsuqe-(la)(N)*
- PA **ki* 'louse' > **tsi*

Nihali, in a few cases, seems to palatalize velars where most Austric languages still have velars:

- Nihali *cān, cán* 'fish' : cf. AA **ka,* AN **Sikan*
- Nihali *jō, jó* 'I' : cf AA. **kwa,* AN **aku,* Tai, Ainu **ku*

But so far these suggestions remain very uncertain. There are not enough clear examples yet to formulate "phonetic laws."

Is Ainu Eurasiatic?

What about the hypothesis of the Eurasiatic (Nostratic) affiliation of Ainu? This idea has been developed by Ramstedt, Patrie, Greenberg, and others. It cannot be denied that there are some lexical parallels between Ainu and the Eurasiatic languages, especially Japanese and Korean. Among these some of the most striking include:

- Ainu **kemi* 'blood' : PSamoyed **kem* or **kə̲m* 'blood', PAltaic **k'i̯ə́no* 'blood, blood vessel', etc.
- Ainu **sine* 'one' : PAltaic **si̯óna* 'one', PIE **san-/*sen-* 'apart, without', etc.
- Ainu **tu* 'two' : PAltaic **ti̯ubu,* PIE **dwōu-* 'two', etc.
- Ainu **kap* 'skin', bark, fur' : PAltaic **k'ə́p'à* 'bark, skin', PUralic **kopa* id.

However, as I remarked in my review of Patrie (1982) (Bengtson [1998]), the few clear parallels between Ainu and Eurasiatic are either loanwords (*e.g.,* Ainu **pone* 'bone', **sippo* 'salt' < Japanese), or, like the four parallels listed above, words of a very old pedigree, and common to several macro-families or even Proto-World. The parallels between Ainu and Austric, on the other hand, are both more numerous and more phonologically straightforward and regular. See, besides the proto-etymologies listed above, the morphological evidence and etymologies involving pronouns, numerals, and other basic vocabulary put forth by Gjerdman (1926), Vovin (1992, 1993), Schuhmacher (1994), Itabashi (1998), Norquest (1998), Sidwell (1998), Bengtson & Blažek (2000).

One of the most decisive facts is that Ainu totally lacks the characteristic Eurasiatic **me / *te* 'me / thee' pronominal pattern, [2] having instead **ku / *an* 'I / me' (discussed further below) and **E* 'thou', with clear parallels in Austric. Ainu morphology in general has a more Austric character than Eurasiatic (Itabashi 1998).

Discussion

The beginning of my work in Austric grew out of my interest in genetic classification of all the world's languages, including the "isolated" languages: Basque, Burushaski, Ainu, Nihali, Kusunda, etc., in the 1980's. Through the preliminary method of mass comparison (multilateral comparison), together with investigating previous proposals, I provisionally found that Basque and Burushaski most probably belonged to

[2] Greenberg admitted this, e.g., (2000, p. 62) "... *m* is the basic indicator of first person, and is found in every subgroup except Ainu ..."; and under "Second-person *t*" (2000, pp. 71-74) there is no mention of any Ainu reflex.

the Sino-Caucasian (Dene-Caucasian) macrofamily, while Ainu most probably belonged to Austric (Bengtson 1992).

In the investigation of Nihali I found Kuiper's notes about some Nihali and Munda words that resembled Ainu words (Kuiper 1962: 43ff.; 1966: 65). Kuiper hesitated to draw any conclusions about these parallels since they seemed to be so few, and impossible to distinguish from chance resemblances.

However, over the years I continued to gather more Nihali-Ainu parallels, and published 26 of them in *Mother Tongue* II (1996). The idea of a greater, more multilateral Austric, including Nihali and Ainu, as well as Austroasiatic, Miao-Yao, Austronesian, and Daic, was supported by Blažek (1996), and later Blažek and I co-authored a paper on Austric parallels to Ainu words (Bengtson & Blažek 2000).

"Nihali and Ainu" has been criticized as "unconvincing" (van Driem 2001: 253), and this criticism is justified as long as the comparisons proposed there are viewed as random resemblances. Therefore here I would like to restate the significance of these parallels (and others added later) and emphasize that there is enough morphological and lexical evidence at least to *suggest a hypothesis* that Nihali and Ainu represent the remnants of western and eastern relic areas of the Austric macrofamily (before the dispersal of Austronesian).

Morphological retentions:

The first person singular pronouns in both Nihali and Ainu exhibit a stem suppletion:

- Nihali *jō, jó* 'I' (nominative) :: *eŋ-* 'me/my' (1st person singular oblique)
- Ainu: **ku* 'I' (nominative) :: **an* 'me' (oblique), **in-* '1st person objective prefix'

In my interpretation these pronouns could point to an original Proto-Austric opposition between nominative **aku* 'I' and oblique **eN-* 'me, my'. As to how Nihali *jō, jó* can match Ainu **ku,* cf. the palatalized forms in Mon-Khmer: Brou *cɯq*, Pacoh *cɯ,* Car Nicobar *cu-ö,* Nancowry *cüa,* Teressa *ciaa* 'I'. See the etymologies **I (1) and I (2)** for details.

First person dual-plural pronouns also exhibit an opposition:

- Nihali *ṯyē-ko, ṯē-ku, té-ko* 'we (two)'(dual/inclusive) :: *māney, manê* 'we' (plural/exclusive)
- Ainu **ti=* 'we' (realized as /či/ in all dialects) :: **un* 'us' (objective)

Possibly these reflect a Proto-Austric opposition between **tV* and **bVn-*. See the inclusive and exclusive forms listed in the etymologies **we / us (1)** and **we / us (2).** It is of course impossible, at this stage, to know what the precise Proto-Austric pronominal paradigms were, and whether the inclusive/exclusive dimension or nominative/objective opposition is original here.

Lexical archaisms: Words for 'eye, eyelid, hot, on(e)(ly)':

- Nihali *jiki, ǰiki(r)* 'eye'
- Ainu **sik* (~ **gik, *hik*) (Vovin): Hokkaido *shik, shiki*, Kuril сикъ [sik] 'eye'

Most Austric languages have instead words of the type **maCa* 'eye'. Apart from Ainu and Nihali the only cognates seem to be found in some Formosan languages and possibly some remnants in Munda (see **eye [1]**). We can go on to the words for 'eyelid' ('eyebrow'):

- Nihali (Bh) *jiki-kap-ri* 'eyebrow', (M) *jiki-kāp-ri* 'eyelid'
- Ainu (Hokkaido) *shik-kap* 'eyelid', (Kuril) си=кап, сикапъ [sikap] 'eyelids' ('eye' + 'skin')

In both languages we see a compound of Austric **Ciki* 'eye' + **kap-* 'skin' (see **skin [1]**). While the agreement of Nihali *jiki* and Ainu **sik* can easily be viewed as a coincidence, the probability that two unrelated languages would also have the same compound, **Ciki-kap,* with the same meaning (if we accept Mundlay's interpretation as the most accurate) must be much smaller. And when we further bring in some other parallels, coincidence seems even less likely. Here we can consider the word for **hot** (see above for details):

- Nihali *cacŭko* 'hot', *cacakāmā* 'to heat'
- Ainu **sEEsEk* '(to be, to grow) hot' > *sesek, seisek, shesek,* Kuril *sesik* 'warm', *sesikva* 'hot'

Here there is both the exact semantic match, and the identical sequence of palatal/sibilant + palatal/sibilant + velar. (Proto-Ainu had no voiceless palatal, only the sibilant **s,* per Vovin [1993]). Consider also the comparison **one (2):**

- Nihali *biḍiko, biḍik,*(beside *biḍi, beḍe, baḍa*) 'one'
- Ainu **patEk* (V) 'only' > *patek* (in all dialects)

Here again we have a triconsonantal match of labial + coronal + velar. These Nihali-Ainu parallels, striking as they are, are not in themselves conclusive, but taken together with other basic comparisons [see especially **come/go, die, fire (1), fire (2), flesh, four, give, hair (1), head, louse (2), man (1), man (2), mountain, nose, one (1), snake, tooth (1)**], there is certainly enough "suggestive evidence" here to propose a hypothesis that Nihali and Ainu represent the remnants of some the outer extensions of the Austric family. Of the twenty-nine Nihali-Ainu comparisons listed above, eleven belong to the innermost core of basic vocabulary, the "35-word list":[3] **die, eye (1), fire (1), fire (2), give, I/me (1), I/me (2), nose, one (1), one (2), tooth.** This tells us that there is potentially a deep relationship of some kind that should be thoroughly investigated.

[3] For the concept of the 35 most basic words, developed by S.E. Yakhontov, see Starostin (1991, 1995, 1996), Sidwell (1998a).

Regarding the relative positions of these "isolates" within Austric, let us look at the distribution of proposed cognates. It is interesting that Nihali retains some words not retained by its closest Austric neighbor, Munda, but that are found in more remote Austric languages (*e.g.,* **child [1], fire [1], flesh, hot, louse [2], nose, snake, tail [1], tie [1], you**). This suggests that Nihali (and the presumed larger family of which it is the sole remnant)[4] stands independent of Munda and may be no closer to it than to the other Austric branches.

Ainu likewise preserves some words found, *e.g.,* in Austroasiatic or Daic, but not in Austronesian (cf. **bite, child [2], come/go, drink, ear [2], fire [2], give, hair [1], horn [1], leaf [2], louse [1], road, sand, skin [2], stone [1], sun, tail [2], thou, year**). My sense from this study is that Ainu enjoys a much firmer position within Austric than Nihali. Remembering that any statistical measure based on the proto-etymologies above should be treated with caution, it is clear that Ainu has more lexical parallels with Austric languages (about 80+ in the list above), in contrast to Nihali and Austric (about 40). Of course, this discrepancy could (at least in part) be an artifact of lack of data (especially as regards Nihali) combined with (in-)competency of the cognate-seekers, but I still get a sense that Nihalic (the putative family Nihali once belonged to) hived off from the Austric family earlier, while Ainu(ic) remained part of the Austric (or Austro-Thai) core a while longer.

Alternatively, Nihalic could have evolved from a creole or poorly learned form of Austric that was partially relexified from the substratum language. (Compare the fate of Austronesian in some areas, and, some have speculated, the Nicobar, Aslian, and "Negrito" languages.) Like other languages with numerous loanwords that have penetrated into their core vocabulary (*e.g.,* Albanian in Europe, Ongota in Africa), Nihali's cognate count, with whatever its parent family might be, is certainly "depressed" by the huge amount of borrowing. (Almost half of Nihali's 35-word list consists of loanwords.) Yet if we account for the loanwords, Nihali's taxonomic position can still be detected, just as Albanian "remains a branch of IndoEuropean, instead of being declared a coordinate sub-phylum as its low cognate retention would suggest" (Fleming 2006: 77).

The Austric hypothesis "has been controversial from the start and is no less so today" (Ruhlen 1987: 151), and there have been several attempts to dismantle it. Benedict (1975: 135), while accepting a genetic relationship among Austronesian, Daic, and Miao-Yao, regarded the "linkage" between these three families and Austroasiatic as "less than a full genetic relationship" that could be attributed to "substratum," namely that the Austro-Thai proto-language was "grafted onto a substratum stock of Austroasiatic affiliation, with almost complete replacement of the latter" (Benedict 1966: 259 = Benedict 1975: 33). Schmidt, Kuiper, Diffloth, and Reid (see below) would argue that the "remarkable agreement" in morphology between AA and AN cannot be attributed to "substratum."

And Thurgood (1994), for example, found phonological irregularities in the etymologies put forth for the Austro-Thai hypothesis and concluded that the words were not genetic cognates but massive borrowings from Austronesian to Daic. In my opinion this assessment is based on an unrealistic expectation: that all genetic cognates must be

[4] Kuiper (1962), Zide (1996), and van Driem (2001) discuss this putative family and its possible hypothetical relation to to vanished languages of other Indian tribes: Bhils, Veddas, etc.

absolutely phonetically regular, and that loan words are irregular.[5] By this logic Indo-European would have to be dismantled since, *e.g.,* 'tongue', 'name', 'heart', and many other basic words are irregular and cannot be reduced to a single proto-form. Vovin (1997; rebuttal by Starostin 2002), used a similar method in attacking the Dene-Caucasian hypothesis.

It has often been remarked that Austric is difficult to accept as a valid family because the lexical evidence is meager. For example, Kuiper (1948: 376) stated, "It cannot, I think, be denied, that the number of etymological correspondences between Austronesian and Austro-Asiatic is smaller than we should expect on account of their remarkable agreement in morphological matters."[6] (He then went on to list a number of impressive lexical parallels, mainly involving Munda and Malay.) Diffloth (1994: 312), noting the same dearth of lexical evidence, actually proposes that this scarcity, when confronted with morphological agreements, "argues for a genetic, and against a contact relationship between the two [Austroasiatic and Austronesian] families, provided we allow for a great time depth in order to avoid the obvious paradox."

On a similar note, consider Fleming (2001: 26, and note 22):

> Even if the Swadesh [lexicostatistical] retentions get very low, it does not follow that no evidence of relationship is left. ... it has been curious that Paul Benedict was able to hold up the achievement of phylum Austric because "it only had morphological evidence." So any Semiticist would have said that was fine and dandy! What is obvious about Austric with so little vocabulary evidence (allegedly) is that it must be very old, comparable to the African phyla with their low percentages of lexical retention. ... we will probably find that Austric is closer to 20,000 years old; that just figures from the great age of Homo sapiens in southeast Asia and the very low lexical factor.

But Austric basic vocabulary may not be as scarce as has been thought. Besides Schmidt's and Kuiper's lists, La Vaughn Hayes has published several articles with Austric comparisons, and has an Austric Glossary on the Internet (92 "pages" at the moment). The Evolution of Human Language / Tower of Babel Project also has a database of Austric comparisons online (903 records, 46 pages). The present work contains about one hundred Greater Austric (proto-) etymologies, and these are restricted to those that involve Nihali and/or Ainu.

I concur with Fleming (1987: 186) that "the longer one looks at the Austric hypothesis, the better it gets". It remains the best explanation, so far, for much of the linguistic diversity in southern Asia and the neighboring islands.[7] I also suggest that the evidence from Nihali and Ainu may significantly add to our understanding of this venerable macro-family, and should be investigated thoroughly.

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[5] Cf. also the "lexical diffusion" of Chen & Wang (1975), showing that phonological changes sometimes fail to affect all the words they "should," or not all at the same time, or not all speakers. Greenberg (1987, p. 19ff) points out that borrowed words sometimes exhibit a regularity equal to or greater than native words.

[6] On morphological evidence for Austric, see Schmidt (1906), Kuiper (1948), Reid (1994). Van Driem (2001: 298ff.) thinks "the evidence mustered to date for a genetic relationship [of Austroasiatic and Austronesian] is tantalising but too meagre to be conclusive. Yet there seems to be sufficient suggestive evidence, both material and circumstantial, to take the theory seriously ..."

[7] This assumes the probable existence of hypothetical macrophyla neighboring Austric: Dene-Caucasian (to the northeast), Eurasiatic (to the northwest), and some form(s) of "Indo-Pacific" and/or Australian to the south. (See the expected contributions to this issue by Blažek, Usher, and Whitehouse.)

Abbreviations

AA	Austroasiatic
ABVD	*Austronesian Basic Vocabulary Database* (Blust, et al.)
AG	*Austric Glossary* (Hayes)
AN	Austronesian
ART	*Austronesian Root Theory* (Blust 1988)
AT	Austro-Thai (Benedict 1975)
BB	Bengtson & Blažek (2000)
Bh	Bhattacharya (1957)
CM	*Comparative Munda* (Stampe)
Dahl	Dahl (1981)
EHL	Evolution of Human Languages / Tower of Babel Databases
IE	Indo-European
K	Konow, Sten (Linguistic Survey of India, as cited by Fleming [1996a])
M	Mundlay (1996c)
MK	Mon-Khmer
MY	Miao-Yao (= Hmong-Mien)
N98	Norquest (1998)
NA	'Nihali and Ainu' (Bengtson 1996)
P	Proto-
P96	Peiros (1996)
PA	Proto-Austric
PAA	Proto-Austroasiatic
PAN	Proto-Austronesian
PMP	Proto-Malayo-Polynesian
PMY	Proto-Miao-Yao
PY	Proto-Yao
S98	Sidwell (1998)
TLR	*Thai Lexicography Resources* (Cooper)
V92	Vovin (1992)
V	Vovin (1993)
W97	Whitehouse (1997)

Austronesian reconstructions differentiated by authors' names are taken from Wurm & Wilson (1975). Ainu words recorded in the 18th and 19th centuries by de Angelis and La Pérouse come from Naert (1961, 1962).

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Appendix A:
Is Ainu a branch of Austronesian?

It is apparent that the variants of Ainu words, especially as collected by early travelers (de Angelis, la Pérouse, Klaproth), are strikingly similar to diverse developments in Austronesian. For example:

Ainu	Austronesian
Kamchatka *bāgāk* 'lungs' (Klaproth 1823)	Ami *valaq* 'lungs' (Formosan) Pazeh *bara?* (Formosan) Tagalog *bá:ga?* (Meso-Philippine)
Hokkaido *rekut-* 'neck' Kamchatka *rēkŭt* (Klaproth 1823) Sakhalin *reguzy* (Klaproth 1823) Nairo *tekuh*	Tagalog *likód* 'back' (Meso-Philippine) Thao *rikus* (Formosan) Puyuma *rikuẓán* (Formosan) Tausug *taikud* (Meso-Philippine)
Proto-Ainu **Etu* 'nose' Sakhalin *idu* (Klaproth 1823) Kamchatka *āhdūm* (Klaproth 1823)	Kerinci *idun, idew* 'nose' (Malayic) Moto *udu* (Papuan Tip) Timugon *aduŋ* (North Sarawakan)
Proto-Ainu **si-ne* 'one' (La Pérouse) *tchiné* (de Angelis) *xine-* Sakhalin *šne-pf*	Kanakanabu *cáni* 'one' (Formosan) Saaroa *ucani* (Formosan) Tsou *cíni* (Formosan)
Proto-Ainu **tuu* 'two' Kamchatka *dūpk* Hokkaido *zuzb, zuzf* (Klaproth 1823)	Central Amis *tusa* (Formosan) Cebuano *duhá* (Meso-Philippine) Kanakanabu *cúsa* (Formosan)

The caption is only half-serious. A more conservative assessment would be that these are convergent developments of related languages that go back to a common Austro-Thai branch of Austric. 'The Formosan languages are so archaic both in phoneme inventory and grammatical forms that they to a certain degree constitute a 'museum' preserving old Austronesian material' (Dahl 1981: 15). Ainu is conservative in some respects (preservation of vowels), though innovative in others (*e.g.*, final **ŋ > 0*).

Appendix B:
Austric substratum in Burushaski?

The presence of old Austric words in the Himalayan regions has sometimes been commented on. For example, Kuiper (1966) mentions Tibetan *snum* 'fat, grease, oil' (see the etymology **oil** in the main text), and Burushaski **bras* '(uncooked) rice', Purik *bras,* Tibetan *'bras* 'rice' (cf. Malay *beras,* etc.).

I find the Dene-Caucasian affiliation of Burushaski to be most probable. The lexical and morphological structure of Burushaski is not very far from East Caucasian (*e.g.*, Bengtson 1997b). But while examining the list of Burushaski words that lack solid Dene-Caucasian etymologies I have noticed that some of them seem to be similar to words of Austric origin:

- Burushaski **phu* 'fire': cf. Nihali *ápó;* AN **Sapuy;* PKam-Sui **pwai;* Ainu **apOy*, etc. (see **fire [1]**)

- Burushaski **ʂek* 'full': cf. AA: MK *s'ak, saak*; AN **sek* 'to cram, crowd'; Ainu **sik* 'full' (see **full**)
- Burushaski **bat* '(flat) stone': cf. AN **batú?* 'stone', PTai **pat* 'gem,' etc.; Ainu *pit* 'small stone, flint' (see **stone [2]**)
- Burushaski **śilan* 'tail' (Yasin): cf. Munda: Mundari *calɔm, ca'dlɔm, ca'lɔm*; MK: Kui *sa:l*; Ainu **sAr* (see **tail**)
- Burushaski **dur* 'sleep': cf. Munda: Birhor *duduṛum, duṛum* 'to sleep', MK: Katu *duul* uɔn 'sleep heavily', etc.; PAN **tiDuR, *tuDuR* 'to sleep' > Malay *tidur,* etc. (AG, AT 383)
- Burushaski **-wal-* 'to fly' (*du-wál-*): cf. PAustric **baʔl* 'to fly, float': PAN **ubal* 'to float' (EHL); Ainu **paar=aC=sE* 'to fly' (a global etymology, but **-wal-* has a distinctly Austric shape)
- Burushaski **ltumal* 'ear': cf. PAN **tumaNa* 'to hear' > Pazeh *taumalá?*, Tsou *t-m-alʉ*, Saaroa *tumimaɬa*, etc. (ABVD)

How would this language contact have come about? A likely scenario would involve a Dene-Caucasian-speaking population, either on the southern edge of a vast Dene-Caucasian territory, or invasive from it, that came in contact with one or more Austric-speaking populations. The latter were eventually absorbed, but contributed some words to the Burushaski language.

The process might have been very similar to the genesis of Japanese. According to Starostin (1991), an invading Altaic group absorbed the Austric people already living in Japan while borrowing many words from their language(s). As a result, nine Austric (or Austronesian) words are found in the Japanese 100-word list. Of the nine only two (*tsunó* 'horn' and *dáre* 'who') penetrated into the 35-word level of basic vocabulary.

Appendix C: Some Global Ramifications

Some of the Greater Austric Proto-Etymologies have reminded us of words that seem to go far beyond Austric territory. One of these is the Austric word for 'blood'

> PAustroasiatic **Cə-ha:m,* PYao **džhyaam,* East Formosan **dzamu(ʔ),* Ainu **kEm* (see **blood** in the main text)

Blažek (2006, in this volume) mentions the following Australian-Dravidian comparison that seems to show wider manifestations of this word:

- **Australian:** pPama **kamu* 'blood' ... Bungandidj *gammar*; Arabana (= Nulla) *ku(b)mari*, Diyari *kumari*, Wangkumara *guma, gomie*, Badjiri *gumaru*, Ulaolinya-Wangkadjera *gimba* (all Karnic); Darkinyung, Awabakal *kumara* (→ Yuin-Kuric); Bigumbil (→ Wiradhuric) *gima*; Bayeli (→ Wakka-Kabi) *kumi*; Dyirbalic *koma*, etc. (S)
- **Dravidian** **kem-* 'red' (DEDR 1931: I, III)

Cf. also **Proto-Altaic** **k'i̯ə̄no* 'blood, blood vessel' (Turk., Tung.); **PSamoyed** **kem* 'blood' (compared with Ainu *kem* by Greenberg [2002: 29]).

Another word is one that denotes 'person, man, human' in Austric:

PAustric **quḷo* 'man' (Hayes): Nihali *Kol-ṭa, Kal-ṭo* 'men, Nihals' (self-name), *Kal-ṭu-manḍi* 'Nihali language', *kōl, kol* 'wife, woman'; Kharia *kɑɾ, kʌɾ, kɔɾ* 'person, human being', Korku *korku, kurku* 'men, Korkus', *koro* 'man', etc.; Khmer *kur* 'Bahnar or Sro'; Bahnar *khul* 'group, kind, type, race of people'; PAN **hulun* 'male, man' (Dempwolff); PMP **qulun* 'outsiders, alien people'; Ainu **kur* 'man, person' (see the proto-etymology **man [2]** in the main text)

Blažek cites the following from Australian and Dravidian:

- **Australian:** Iwaidjan (= 'Cobourg Pen.') *koala, cloin*; SDjeragan *geraugen*; PN: Pallangahmiddang *gerree*; Gunggari-Birria (→ Maric) *karkura*; NEBungandidj *koloń*; Kulin *kuli(n)*; Kuri **kuri*; Warluwara (= Walookera → Wagaya-Warluwaric) *kā́ro*; Mabuiag *garka(i), garakatsi*; Amandyo (→ SW) *karu* '(aboriginal) man' (S)
- **Dravidian** **kuṟ-* 'man of a primitive tribe of mountaineers' (DEDR 1844: I, II, III, VI)

This reminds us of some words from all around the world:

- **Niger-Kordofanian**: Sango *koli* 'man', Ligbi *kili,* Wolof *gur,* Fula *gor*-ko, etc.
- **Nilo-Saharan**: Songhai *har,* Daza *kalle* 'young man', etc.
- **Proto-Eurasiatic** **k'Ul'V* 'person' > Russian *čelo*-vék 'person, human', Sanskrit *kúla-* 'family, herd'; Mongolian *qulu*-nča 'ancestor'
- **Proto-Dene-Caucasian** **χ̄ōlʔV* 'male' > Khwarshi *χ̄ol* 'husband', Archi *χ̄:ili* 'bull-calf', etc.; cf. Ket *qɬliŋ* 'adulterous'
- **Amerind:** Chinook *i-kala* 'man', Yakonan *qaal-t* 'man', etc.

For other wide-ranging cognates see Dolgopolsky (1996), Fleming (1996).

Appendix D: The Current Status of Ainu

We are grateful to have the following information about the current status of the Ainu language from Yoshizo Itabashi of the University of Kyushu, Fukuoka, Japan:

Bengtson: Do you record Ainu from people who are still speaking it?
Itabashi: Yes, we can still record Ainu.
Bengtson: Is Ainu really extinct (as usually regarded by us in the USA)?
Itabashi: We still have over 10 Ainu people who are now in their 70's and 80's. No Ainu people are routinely using their language, but they are still able to speak their language because they grew up routinely hearing the language from their grandparents who lived together with them when they were very young.
Bengtson: Is there any attempt to revive the Ainu language among the younger Ainus, either by the Japanese government or private organizations?
Itabashi: Yes, there are about ten weekly operated private Ainu night schools in Hokkaido (the northernmost island, where two thirds of the Ainu population live) to try to revive the language. (Many of the students are Japanese and they meet once or twice a week in the evenings.) But so far we have not succeeded in reviving the language. We lack Ainu teachers. The teachers are mostly middle-aged Japanese (many of them are university

professors who teach Ainu at their university) who acquired the language at a university. The old Ainu people cannot afford to teach because of their poor physical conditions. There are no public organizations to support the Ainu language.

There is an organization promoting Ainu language and culture called *Utari Kyoukai* ("Our Fellow [*utari*] Association [*kyoukai*]" see: http://www.ainu-assn.or.jp/about01.html), which supports not only Ainu people but publishing and research to promote the Ainu language and culture and other related aspects.

Yoshizo Itabashi

home address:
514-2 Mitsuyoshi, Nijo-machi,
Itoshima, Fukuoka 819-1624
Japan
home e-mail address:
any_itabashi@ybb.ne.jp

office address:
Division of Sound Cultures
Department of Acoustic Design
Faculty of Design
University of Kyushu
4-9-1 Shiobaru, Minami-ku,
Fukuoka, Fukuoka 815-8540
Japan
office e-mail address:
itabashi@design.kyushu-u.ac.jp

Appendix E: The Core Basic Vocabularies of Ainu and Nihali

Ainu

The following table compares the 35 most basic words[1] of Ainu with those of Austric languages, and also with some Eurasiatic/Nostratic words. A plus + in the Austric columns indicates that a cognate or parallel with the same meaning is found in the relevant family. A plus in parentheses (+) indicates that the word is restricted to one language or a part of the family, or the meaning is different from the gloss in the left column. (See proto-etymologies for details.)

(gloss)	Ainu	Nihali	Austro-Asiatic	Miao-Yao	Austro-nesian	Daic	Eurasiatic/ Nostratic
blood	***kEm**		+	+	+		*k'i̯ăno[2]
bone (1)	***pone**[3]				?		*baina-[4]
bone (2)	***kEqu**		+	+	+	+	
die	***day**	(+)		+	+	+	*dhew-[5]
dog	***[s]ita**		+		(+)		
ear	***kisAr**		(+)			+	
egg	***nOk**		?	(+)	(+)	(+)	ŋóik[6]
eye (1)	***sik**	+	?		?		sakuwa[7]
eye (2)	***nuu**						*nun[8]
fire (1)	***apOy**	+	+	(+)	+	+	*peHw-[9]
fire (2)	***un-ti**	(+)	+			(+)	ʔmáči[10]
fish	***tiqEp**						*ǯi̯abo[11]
full	***sik**		+		(+)		
give	***kO[O]=**						kura-[12]
hand (1)	***tE(=)k**		+	+	(+)		*deik-[13]

[1] For the concept of the 35 most basic words, developed by S.E. Yakhontov, see Starostin (1991, 1995, 1996), Sidwell (1998a).

[2] Proto-Altaic 'blood, blood vessel' (Turk., Tung.); cf. PSamoyed **kem* 'blood' (Greenberg 2002: 29).

[3] Thought to be a loan from Old Japanese **pònè*. Otherwise, cf. AN **bani* > Atayal C'uli' *banil* id. and / or PPolynesian **pona* 'joint' > Maori *pona*, etc. (BB 17).

[4] PGermanic 'bone'; PAlt. **p'èjñé* 'bone' (Greenberg 2002: 30).

[5] PIE 'to die'; cf. PAlt. **debí-* 'bad, to suffer' (S.A. Starostin). Comparisons attributed to Starostin are drawn from EHL databases.

[6] Nivkh (Gilyak), a loan from Ainu (per Norquest), or Ainu < Nivkh (per Vovin). Greenberg (2002: 60) compares Ainu *nok* with PChukotian **lix-lix* 'egg'.

[7] Hittite 'eyes' < PIE **sekʷ-*; cf. PAlt. **si̯ăk'à* 'to think, worry', PUr. **šoke-* 'to say, speak', PEskimo **ciqə-ʁ-* 'to remember' (S.A. Starostin)

[8] PKorean 'eye' < PAlt. **ni̯ă*, compared by Norquest (1998) as probable loanword (Ainu < Kor.)

[9] PIE 'fire'; cf. PAlt. **p'i̯agV* 'hot, sun, day', PUr. **päjwä* 'fire', PKart. **px(w)-* 'warm', etc. (comparison by S.A. Starostin). Greenberg (2002: 33) compares Ainu *ape, apoi* instead with PIE **bhā-, *bhə-* 'shine, appear' and Korean *p^{h}i* 'burn, is kindled'.

[10] Ryukyuan 'fire' < Old Japanese **umati* (S.A. Starostin, with ?).

[11] PAltaic 'a kind of fish' (Mong., Tung.)

[12] Japanese 'to give me from treat' (S.A. Starostin).

[13] PIE 'point out, show', the root of Latin *digitus* 'finger', etc. (Greenberg 2002: 69).

(gloss)	Ainu	Nihali	Austro-Asiatic	Miao-Yao	Austro-nesian	Daic	Eurasiatic/ Nostratic
hand (2)	***mOn**		(+)		(+)	+	*mar/n-[14]
horn	***ki(=)raqu**		+		+	+	*k̂er-[15]
I	***ku**	+	+	+	+	+	*eĝho-[16]
know	**?**						
louse	***ki**	+	+				
moon	***tiqu(=)p**[17]						*šálpu[18]
name	***dEE**						
new	***asir**						*c'ir[19]
nose	***Etu**	+		+	+	+	
one	***si=nE=**	(+)	(+)		+	+	*s̱óna[20]
salt	***sippO**[21]						
stone (1)	***suma**		+				
stone (2)	***watara**[22]						
stone (3)	***pOqina**						
sun[23]	**(tombe)**		+				
tail	***sAr**		+				*seri[24]
this	***ta=**		(+)				*to-[25]
thou	***E=**		+		?	?	
tongue	***agu**						*akui[26]
tooth (1)	***ima(=)k**	+	+		+	+	
tooth (2)	***nii**		+		+		ni[27]
two	***tuu=**		(+)		+	+	*ṯubu[28]
water (1)	***wakka**[29]		(+)		+	?	*ak^{w}-[30]

[14] PIE 'hand'; cf. PAlt. *mắña* 'paw, hand', PUgric **mVrV* 'handful', PDrav. **maṇi-* 'wrist', **mār-* 'arm, wing, fathom', etc. (S.A. Starostin). Greenberg (2002: 88) makes a similar comparison.

[15] PIE 'head, horn', etc. compared by Greenberg (2002: 92) with Ainu *kirawe.*

[16] PIE 'I' (comparison by S.A. Starostin). Greenberg (2000) refrains from comparing PIE **eĝ(h)om* with Ainu *ku.*

[17] Also 'sun'.

[18] PAlt. 'a celestial body' > Jap. *sùbaru, súbaru* 'Pleiades', Mong. *čolbun* 'Venus', etc. (S.A. Starostin).

[19] PNivkh 'new', suggested by Norquest (1998) as loanword (Ainu < Nivkh).

[20] PAlt. 'one, single' (Turk., Mong., Tung., Kor., Jap.); cf. PIE **san-/*sen-* 'apart, without' (Lat. *sine,* Eng. *sunder,* etc.).

[21] Thought to be a loan from Old Japanese **sipo.*

[22] Vovin (1993) reconstructs **hdatara,* but all attestations have *w- (v-).*

[23] See 'moon'.

[24] PAlt. 'buttocks, defecate' + Old Japanese *siri* buttock', compared by Greenberg (2002: 162) with Ainu *sar.*

[25] PIE 'this'; cf. PAlt. **t'à (*t'è)* 'that', PUr. **tä* 'this', etc. (comparison by S.A. Starostin).

[26] Middle Korean 'mouth', compared by Norquest (1998: 97) as probable loanword (Ainu < Kor.).

[27] Middle Korean 'tooth' + PAlt. **ñVjV* (?) 'gums', compared with Ainu *ni-rus* 'gum(s)' by Greenberg (2002: 171). Norquest (1998) suggests the Ainu word is borrowed from Korean.

[28] PAlt. 'two' (Turk., Mong., Tung., Kor.); cf. PIE **dwo:u-* 'two', PUr. **to-ńće* 'second' (Greenberg 2002: 174).

[29] Vovin (1993) reconstructs **hdak=ka.*(cf. **stone [2]**, above).

[30] PIE 'water'; cf. PAlt. **i̯àk'i* 'liquid, flow', **uk'u* 'wet, wash', etc. (comparison by S.A. Starostin); also Greenberg (2002: 179), including PUr. **joka* 'river', Japanese *aka* 'bilge water', etc.

(gloss)	Ainu	Nihali	Austro-Asiatic	Miao-Yao	Austro-nesian	Daic	Eurasiatic/ Nostratic
water (2)	*pE		(+)		+	(+)	pi[31]
what (1)	*gEm=an=ta						*k'a(j)[32]
what (2)	*nEE=	?	+		+		*ŋ[i̯V][33]
wind	*dEEra						
year	*paa					+	*pùnV[34]

Nihali

The following table compares the 35 most basic words of Nihali with those of Austric languages. A plus + in the Austric columns indicates that a cognate or parallel with the same meaning is found in the relevant family. A plus in parentheses (+) indicates that the word is restricted to one language or a part of the family, or the meaning is different from the gloss in the left column. (See proto-etymologies for details.) Loanwords are indicated by the family of ultimate origin: D = Dravidian, I = Indo-Aryan, M = Munda. I have not been able to determine the Nihali words for 'know'and 'name'. For 'wind' I have used *ōra* 'air'.

(gloss)	Nihali	Austro-asiatic	Miao-Yao	Austro-nesian	Daic	Ainu
blood	corṭo (D)					
bone	pakoṭo (D)					
die	beṭṭo					
dog	nāy (D)					
ear	cigam	?				
egg	kallen		+	+	+	
eye	jiki	?		?		+
fire	āpo	+	(+)	+	+	+
fish	cān	+		+	(+)	
full	bherya (I)					
give (1)	ma-	+				(+)
give (2)[35]	be- (M)					
hand	bokko					
horn	singi (I)					
I	jō	+	+	+	+	+
know	?					
louse (1)	kepa					(+)
louse (2)	cilar-	+				+

[31] Korean 'rain', compared with Ainu *pe* 'water', along with PIE **ap-* 'living water, river', PAlt. **p'i̯age* 'rain', etc. by Greenberg (2002: 179).
[32] PAlt. interrogative > Jap. *–ka* (interrogative particle), Turk. *kim* 'who', etc. (S.A. Starostin).
[33] PAlt. 'what, who' > Jap. *náni* 'what', Kor. *nú-* 'who', etc. (S.A. Starostin).
[34] PAlt. 'year, spring, summer', compared by Patrie (1982) with Ainu **paa.*
[35] Another synonym is said to be *de-* < Indo-Aryan (Mundlay 1996b).

(gloss)	Nihali	Austro-asiatic	Miao-Yao	Austro-nesian	Daic	Ainu
moon	thenḍey[36]					
name	?					
new	navā (I)					
nose	cōn, cojona		+	+	+	+
one	biḍiko					(+)
salt	copo (D)					
stone	cago	(+)				
sun	diya devta (I)					
tail	pago			(+)		
thou	nē (D)					
tongue	lāy	+		+	+	
tooth	menge	+		(+)	(+)	+
two	ir(ar) (D)					
water	jappo, joppo	(+)			(+)	
what	nānā (D)					
who	nāni (D)					
wind	ōra					
year	vorcho (I)					

A large proportion (ca. 40%) of the Nihali 35 word list consists of loanwords.

[36] The form cited by Bh; M cites the forms *cended* and *thénded* 'moon' < Indic *candrá-* ? Another synonym is (K) *mindī-dēwtā* 'night-sun' (Drav.? + IA).

Outside relationships of Australian languages

by Paul Black, Charles Darwin University

Before colonisation perhaps as many as a thousand distinct varieties, constituting nearly three hundred mutually unintelligible languages, were spoken in the area that has become Australia. While these languages vary considerably, it has long been assumed that most are genetically related within what has come to be known as the Australian phylum, and since Dixon (1980) this certainly seems to be true of at least those spoken on the Australian mainland. For some of the off-shore languages of Australia this is less certain, and thus it should not be surprising that there has been even less convincing evidence of a relationship with languages outside Australia. This paper thus starts with a brief overview with what is believed about the relationships of languages within Australia before considering proposals for more distant relationships.

The situation within Australia

It is especially clear that the bulk of languages spoken across much of the Australian mainland, with the exception of the northwest and much of the north central regions, are related within what is known as the Pama-Nyungan family; for recent overviews see Alpher (2004) and O'Grady and Hale (2004). The exact membership of this phylum has undergone review in recent years (see e.g. Evan and Jones 1997: 385-92) but this is largely just a question of what to include within the family and what to treat as closely related to it.

The remaining languages of the mainland, in the northwest and north central, are substantially different, notably in that they usually have prononimal and other prefixes on verbs that Pama-Nyungan languages do not. Even so, they still show substantial evidence of relationship among each other and with the Pama-Nyungan languages. Significant comparative work involving some of these languages was recently published in a volume edited by Evans (2003).

The relationships of some off-shore languages are less clear. In the Torres Strait, the western group of varieties, such as Kala Kawaw Ya of Saibai Island, is a reasonably typical Pama-Nyungan language in terms of its pronouns and occasional aspects of grammar, but there is less evidence for this relationship in its lexicon, which to some extent has been borrowed from the eastern Torres Strait language, Meriam Mir. The latter is otherwise quite different from other Australian languages, and in fact is it obviously related to certain languages in nearby areas of Papua New Guinea; it is in fact the one indigenous Australian language that it clearly related to languages outside the country.

Of other off-shore languages, the Tiwi language of Bathurst and Melville Islands shows some similarities with Australian languages in its pronouns, and some aspects of its grammar can also seem related to those of some mainland languages. At the same time it seems very difficult to find much lexical evidence of a relationship with the mainland languages. I know less about the Anindilyagwa language of Groote Eylandt, but at a time when Dixon (1980) believed in the genetic relationship of most Australian languages, he felt that the evidence for Tiwi and Anindilyagwa was the least substantial.

For the island of Tasmania we have poor and limited attestations of what seems to have been about a dozen indigenous languages, and it is simply unclear to what extent these might have been related to the languages of the mainland (Dixon 1980: 233).

Relations with outside languages

Over the past century and a half there have been various suggestions about possible affiliations between Australian languages and those outside Australia, including Austronesian, Papuan, Dravidian, Andamanese, and even indigenous American languages (e.g. Rivet 1925). Most of the early proposals were reviewed by Ray (1925) and more recently summarised by Dixon (1980: 236-7, 488-9), who felt that the typological similarities with Dravidian were striking, but that there was little evidence of cognates.

Earlier it was noted that the western varieties of Torres Strait, such as Kala Kawaw Ya, seem to group with the Pama-Nyungan languages of the Australian mainland, despite heaving borrowing from the Papuan language of eastern Torres Strait. In the 1980s I saw a fascinating manuscript by Rod Mitchell suggesting that many Kala Kawaw Ya forms could be Austronesian in origin, whether genetically or through borrowing. An example I was already familiar with was the form *susu* for 'breast' or 'milk', which seems to be widespread Austronesian, and which I also found as *tjutju* in at least one mainland Australian language of northeastern Cape York Peninsula. Presumably more information can now be found in a masters thesis by Mitchell (1995).

However, the most promising place to look for possible relatives to Australian languages seems to be New Guinea. When such possibilities were considered by Wurm (1975), he could do little more than note evidence of borrowing across the Torres Strait, with, for example, *kalka* and various related forms for 'spear' throughout Cape York Peninsula apparently having originated from forms more like *kalak* in New Guinea. Foley (1986: 269-75) did much better, pointing out seventeen possible cognates between widespread Australian vocabulary and forms (sometimes reconstructions) in the Eastern Highland languages of New Guinea; these included two pronouns, five monosyllabic verbs, and ten items of relatively basic vocabulary. Foley himself characterised his evidence as 'a first attempt' and 'not strongly compelling'.

Possibly Foley's evidence may have been surpassed in an unpublished paper by Donohue and Terrill (1996), which is said to have suggested a connection between the Australian languages just south of Torres Strait and those in New Guinea just north of the nearby coast. However, the fact that twenty years after Foley's work I have yet to see anything further in print leaves me wondering whether a better case can be made, since it does not seem to take much effort to find small numbers of possible cognates between just about any two languages or groups, as Dyen (1970) once demonstrated for Indo-European and Australian.

In an attempt to justify my cynacism I spent about half an hour trying to see how good a case I could develop for a relationship between widespread Australian forms (A, e.g. as in Dixon 1980: 100) and Japanese (J). This yielded eight possible cognates, namely A *miil,* J *me* 'eye' (and *mi-* 'see'); A *ngaan-* 'who', J *nan(i)* 'what'; A *ya(n)-* 'say', J *yar-* 'do, give'; A *minh-* 'what, animal', J *minna* 'every-one/-thing'; some A *kapu* 'water', J *kawa* 'river'; and the following three that involve a correspondence between A *l* and J *t* (or *ts* allophonically): A *bula,* J *futa-*, 'two'; A *jalany,* J *shita,* 'tongue'; and A *mal-* 'get', J *mots-* 'have, hold'. I wonder how long if would take me to double the number to match Foley's evidence.

Conclusions

The evidence I have seen makes me believe that if we are ever able to establish relations between Australian languages and those elsewhere, the most promising area to consider is New Guinea, where regrettably we have quite a varied range of languages to consider. But from what I have seen, this still remains to be done.

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The "Lost" Paper: A Belated Conference Postscript

by Paul Whitehouse
Santa Fe Institute

Because the Harvard conference was running late I felt it my duty, as the final speaker, to keep it short, and did my talk in three and a half minutes. Tearing up the script was not difficult because I didn't have a script. What I did have was a range of topics which—time permitting—might have had people talking for an hour or so. This, of course, is what conferences generally and Mother Tongue in particular are for, and here are a few of the suggestions I might otherwise have felt it my provocative duty to make.

The Concept of "Australoid"

Something that was touched upon at an early stage was the concept of the "australoid" racial type. This is a term left over from theories of human development that are now otherwise discredited, but the phenomenon that gave rise to "australoid theory", namely the existance of pockets of black people from India to Oceania, continues to generate some unease. The question is always couched in terms of, 'how did there come to be black people in these locations?' Sometimes this is even expressed as, 'what are these black people doing so far from Africa?' In each case the underlying assumption is that they must represent a migration of black people out of Africa. And indeed they do—but then so do all the other non-africans.

The obvious explanation for the known distribution pattern is that modern humans (*Homo sapiens sapiens*) originated in Africa and spread from there to colonise the entire world. This ancestral population was black and so were the first people to leave Africa. They crossed into Arabia from the Horn of Africa and continued on around the coast into India, Southeast Asia and Indonesia, and finally across open sea into Australia, New Guinea and the Solomon Islands. At the end of this journey they were still black people. Why? Why not? Because they had never been penalised for it. The crucial question is therefore not, 'why are the "australoids" black?' but, 'why isn't everyone else?' To account for what I think may have happened I will begin with some nice vague, anecdotal evidence.

Recent tragedies in the highlands of Eurasia have brought to our TV screens a curious phenomenon. In the refugee camps of Bosnia, Kurdistan and Afghanistan we see again and again the combination of black haired adults with blond haired children. But not only there. I have a black haired friend from the Western Isles of Scotland who said he was blond until the age of four or five, and there are also striking photographs of blond haired aboriginal children in the deserts of Western Australia. What this suggests to me is that blondism is an infantile characteristic whose appearance in eurasian adults arises from a mutation in the gene(s) regulating the onset of hair pigmentation.

But this may not be the only neotenous characteristic in Eurasia. Consider also the unique ability of european adults to digest unfermented milk. And might the loss of pigmentation to the skin and iris also be neotenous characteristics? The hypothesis seems plausible.

So, what sequence would this have followed? Firstly, the mutations occurred, and those affected were not penalised for them. Then, presumably, those not affected were substantially penalised for the lack of these mutations. One reason often advanced is that black skin does not allow sufficient synthesis of vitamin D from sunlight during the long winters found at high latitudes. Quite how the loss of pigmentation "saved" the individuals concerned during winters that obliged *everyone* to be heavily clothed from dawn to dusk regardless of skin colour, I do not understand. What seems more likely is that the mutation occurred in a small, isolated community in which each individual constituted a significant percentage of the total population, and this alone was responsible for the disappearance of the non-mutant genes. It has been suggested that during the deepest glaciation the population of western Eurasia was confined to a number of refuges, in places like Spain and Greece, and the groups were largely isolated from each other for long periods of time. This would certainly have allowed a non-lethal mutation that might otherwise have been swamped in a larger population to become prevalent. I am thinking here of populations that might at one stage have been reduced to a handful of individuals. In other words, it's all down to inbreeding.

It does not automatically follow that neotenous mutations and the long period of near extinction are causally linked. These mutations might just as easily not have happened, and the isolated populations from which modern northern Eurasians are descended would then have been just as black as the Australians or the Solomonese. Similarly, the weather could just as easily have turned *warmer* at this time and the isolation not have resulted. The impact of these mutations has been further exaggerated by the historical accident that the highlands of western Asia and southern China, where the first agricultural developments occurred, happened to have paler skinned inhabitants, as a consequence of which the greater population densities attainable by agricultural communities led to black people being progressively outnumbered in southeast and southwest Asia. Where cultiviation seems to have been developed independently in places with black populations (New Guinea and the Sahel) this did not happen.

One reason for this assumption of multiple mutations in very small populations is that the populations of northeast Asia have undergone almost the same degree of skin pigmentation loss as the west Asian population from which they are (at least in part) derived. On the other hand, I know of no blond haired children of black haired parents in China or Japan. This would suggest a first genetic bottleneck involving the loss of skin pigmentation, and a second involving the further loss of hair and eye pigmentation. Both would have occurred in west Asia, the first before this population spread out east and west, the second after the peopling of Siberia and subsequent interbreeding with those populations that had entered east Asia from India via southeast Asia.

Returning, at last to the "australoid" theme of the Harvard conference, what, if anything, does the infant blondism of the Western Desert tell us about the origins of the Australians? The answer may be, not a lot—at least not until significant gaps in our data are filled. One requirement is a comprehensive and systematic (i.e. non-anecdotal) study of where infantile blondism is and is not found. Another is a better understanding of how infantile blondism (and the other possibly infantile traits mentioned) and their regulatory mechanisms are

encoded genetically.

The question behind this discussion of Western Desert blondism is, where did the Australians come from, and when? The shortest sea route into Australia is across from Timor (a much shorter crossing when the sea level was at its lowest) and it is there that one would expect to find the closest relatives of Australian, linguistically and genetically. Sadly, this is a part of the world in which the ancient languages have been mostly or entirely replaced in the last few thousand years by Austronesian languages. In and around Timor we are fortunate still to have a few non-Austronesian languages. However, *their* closest affiliation seems to be with languages families along the southern coasts of New Guinea (South Bird's Head, Kolopom, Eleman, Eastern Trans New Guinea etc.), and the wider affiliation of this grouping suggests that their presence in Timor is the result of a *westward* movement, presumably from the area between present-day Australia and New Guinea that is now on the sea bed. Thus we have no obvious linguistic relations of Australian in the places they seem most likely to be found. The same appears true of the biogenetic data, with the divide between Australian and non-Australian being consistently deep along the entire Sumatra-New Caledonia arc.

As an alternative to this model it has been suggested that the easiest route into Australia was from New Guinea via a route into the Bird's Head Peninsula. The earliest archeological dates from modern humans in New Guinea predate the earliest australian by ten thousand years. Such a model would be expected to produce a pattern of language diversity involving several deeply divergent families in Australia, each most closely related to families in and around New Guinea. This is not the case, however. The languages of Australia have an obvious unity. With the exception of Meriam and Mabuiag on the islands of the Torres Strait, the division is stark. It is easy, coming into the field for the first time, to imagine that the precise corresondence between the linguistic and political boundaries is too good to be true and someone must have made a mistake. But there is no mistake. When you look at the data the division really is that clear-cut. If the first people into New Guinea did carry on down into Australia, they and their languages have now disappeared.

This is borne out by a study of mitochondrial DNA by Redd and Stoneking (1999) in which their two sets of Australian samples ("Arnhem Land" and "NW Australian", presumably from the Kimberly region) aligned more closely with the samples from India than with those from New Guinea, the Malay peninsula and the Moluccas. I do not know whether more recent work has confirmed this pattern or superseded it. The y-chromosomal tree presented at this conference by Peter Underhill (so far as I understand it) shows all the Australians belonging to a single (exclusively australian) branch of his "C" haplotype, one of several. The possibility remains that some further mutation may be found that will indicate the order in which these branches came into being. One thing that gives reason for hope is the news that educated aboriginal Australians are beginning to take an interest in biogenetic research and the flow of new samples may resume after a long drought.

My own interpretation of the data in Redd & Stoneking is that the ancestors of the modern Australians separated from the other Indian-Pacific populations at an early stage, perhaps even in India itself, and arrived in the Timor region in time to cross into Australia during a deep glacial period. The linguistic divide between Australian and non-Australian supports this. The question is, which deep glacial period?

In my Mother Tongue paper commenting upon Geoff O'Grady's Pama-Nyungan work (Whitehouse 2004) I argued that the contrast within Australian between typological and pronominal homogeneity and deep lexical variation suggests that the ancestors of the modern Australians entered a continent that was largely uninhabited, and that when language contact did occur it was only between Australian languages that were typologically similar. Like contaminating like, in other words. The cause of this prior depopulation would have been the dessication that occurred throughout the world during the coldest phases. The historically documented Australians were very skilled at surviving in a dry land, but that does not mean that even they would have been able to cope with the worst of the dessication, let alone earlier populations who may have lacked those skills. The example of the Western Desert languages, whose homogeneity suggests recent expansion into an uninhabited area, shows that that even the most advanced Australians could not always survive *everywhere* in Australia. This makes it more likely that during the coldest phases the population of Australia became separated into several groups enjoying little or no contact.

The pattern of diversity within Australian generally, and also within its Pama-Nyungan branch (which seems to cluster in a way consistent with a period of fragmentation and isolation) suggests that this process of dry-weather depopulation happened again after Australian and Pama-Nyungan had begun to break up. This would push their arrival in Australia back much further.

One argument in favour of this is that the Yulngu branch of Pama-Nyungan is separated from the rest of the family by the Gulf of Carpenteria. It seems reasonable to suppose that the break up of Pama-Nyungan had already begun when the Gulf was formed, and this is further supported by the fact that the primary split within Pama-Nyungan is *not* between Yulngu and all the rest. Indeed, Yulngu seems to align with the western and northeastern groups, against the Karna-Narinyeri and southeastern groups.

It is of course possible that the common ancestor of this northern part of Pama-Nyungan was spoken on what is now the Queensland side of the Gulf, with the speakers of proto-Yulngu separating themselves by moving west and north along the coast rather than being cut off by the rising waters. The non-Pama-Nyungan languages that now stand between them and the rest of Pama-Nyungan would then respresent a later eastward movement.

On the other hand, Peter Sutton, in a recent talk at SOAS (Sutton 2007), referred to continuous occupation rather than large scale depopulation. Indeed, this talk gave a very different picture of language change in Australia from what I myself would have argued at the conference, so perhaps it may be appropriate before discussing the relative merits of his view and mine, to prepare the ground by asking what exactly is the problem with Australian?

The "Australian Problem"

The languages of mainland Australia (i.e. excluding Tasmanian) are universally accepted as belonging to a single family. Not one is thought to belong elsewhere. Apart from some Torres Straits Island languages, clearly a part of the australian language continuum, there are no languages outside Australia—not one—that are viewed as possible additions to Australian, even in the wildest of proposals. This unanimity among linguists is rare, but the grounds for it

are very strong. Australian lacks a fricative series. Though some fricatives are found in the far north, these are nowhere phonemic. The contrast between voiced and unvoiced consonants is so rare that it seems overwhelmingly likely that it was absent in the protolanguage too. Australian languages distinguish between four and six points of articulation. All have phonemic palatal stops. The vast majority have more than one rhotic, more than one lateral, and at least three nasals.

In addition to this phonological uniformity there is widespread similarity among pronominal systems, with an all but universal first person ŋ- ~ ŋa. There are also a number of vocabulary items found throughout Australian, as detailed by Arthur Capell under the heading "Common Australian." Some of these more properly characterise the widespread Pama-Nyungan subgroup; others ('tongue,' 'tooth,' 'thigh') are found in even the most divergent branches of Australian. So what's the problem?

The picture this conjures up is of a very low level family with obvious boundaries and obvious internal structure: like Dravidian if it were larger, with a dozen small subgroups of the same time depth as Kurux-Malto, and a dozen Brahuis. And that is indeed what *parts* of the Australian data look like. However, other parts of the data look more like the west african parts of Niger-Congo, with huge differences in vocabulary from language to language. Here is the "Australian Problem" in a nutshell. Everything about it is lopsided. One would expect to see a "pyramid" distribution, wherein some words are found almost everywhere, a second set of words found in half the languages, a third set found in a quarter of languages, and relatively few words found in only one language, but this is not even true of Pama-Nyungan. Quite the opposite.

Pama-Nyungan (which accounts for three-fifths of the languages and four-fifths of the continent) has been credited by some linguists with a time depth of just 4-5,00 years. This would have required it to spread very quickly across a large area and in the process split into dozens of very similar descendant languages. It seems most unlikely that in such a situation *any* word could disappear from every branch but one, let alone items of core vocabulary. In fact, there are many cases where it is only possible to identify a couple of words shared by two or more branches of Pama-Nyungan, and often these are neighbours where borrowing may be responsible. If one looked only at these vocabulary items rather than the pronouns or universally attested forms like those for 'eye,' 'tongue,' 'tooth,' one would assume one was looking at the outcome of ten or more thousand years of separation.

Leaving aside what this may tell us about the difficulties inherent in absolute dating by glottochronological means, how are we to explain this inconsistency within the data? One explanation is that Pama-Nyungan replaced a much more diverse range of languages, and it is retentions from these substrates that have skewed the data. However, in his SOAS lecture Peter Sutton pointed out that in Australia population movements do not produce language replacement. On the contrary, people who move into an area tend to adopt the language of that area. The right to occupy a given area is seen as matters of inheritance, passed through the paternal line. In a culture where communities are small and inter-communal marriage is the norm this can often result in someone from outside the group but with the right ancestry being brought in to assume custody of the land. This inheritance carries various obligations, however, with the newcomer required to learn the language and the rituals of his new home.

Thus the languages remain *in situ* while the people move around, with languages being preserved which might otherwise have disappeared. This might help to explain how parts of Australian languages are unusually well preserved while other parts suffer more typical lexical attrition.

Bear in mind, though, that these are all fully inhabited areas. Where depopulation occurs peoples with no such family connections may come into contact, resulting in the more familiar pattern of war and conquest. This is known to have occurred where the Western Desert peoples emerged from previously uninhabited land and came up against those with whom they had no contact history, and presumably this must also have been true at earlier times. The question is, which model characterises the contact between the ancestors of the modern Australians and the people who preceded them? Assuming the former arrived during a colder phase with associated depopulation, this would have involved war and dislocation rather than the pattern of intermarriage and continuity described by Peter Sutton.

But who were their predecessors? The obvious candidates are the Tasmanians, but Timothy Usher (2002) has made a case for them belonging to *part* of the Bougainville-Pacific grouping. In view of the internal arrangement of this group, the only explanation can be that the Tasmanians came across from the vicinity of Rossel Island and down the coast to Tasmania. A population that had arrived in Australia before the modern Australians and populated the continent from NW to SE would be expected to speak languages aligning with those still in the Timor region, and that *very* distantly. The Tasmanian-Pacific relationship is too recent to fit this model, and lies along the wrong axis geographically. However, the possibility that this migration brought relatives of the Tasmanians to other parts of SE Australia, whose languages were replaced by those of the modern Australians, should not be ruled out.

The Influence of Geography

A recurring theme in all of this is the rise and fall of the sea level. More than anywhere else in the world the shallowness of the continental shelf caused great expansions and contractions in the land surface area. The current sea-bed confirms it, though of course even this under-represents the true land-loss. The sea does not rise gently. It sends great waves crashing into shorelines, carving out deep grooves in the sea-floor where channels form, undercutting great cliffs and in time reducing whole islands whose highest points were higher than the present day sea level to submarine banks and shoals. At its most extreme the opening of new channels may alter the circulation of warm and cold seawater which in turn affects air circulation and rainfall patterns.

Thus the topography of the region is guaranteed to keep populations moving so we must expect the present day linguistic situation to reflect these repeated scatterings of peoples. This is certainly borne out by the linguistic relationships within New Guinea, where groups so often seem to be strung out along the coasts, north and south. The grouping of language families of the southern New Guinea coastal regions listed above (strretching from Timor to the eastern peninsula) is one example. Similar combinations may be identified in the north, linking Halmahera and the New Guinea mainland. But even inland, the drying out that

occurred when New Guinea was united with Australia as a single land mass has left its mark, which I would like to illustrate with the following example.

A New Grouping in Central New Guinea?

Tim Usher (pers. comm.) has suggested that the Pauwasi family of central New Guinea should be expanded to include a number of other languages hitherto considered isolates of various degree, namely Molof, Tofamna, Usku, Biksi and Yuri. The first three have been treated as co-ordinate branches of Wurm's Trans-New Guinea phylum, Biksi as a co-ordinate branch of the Sepik group. Yuri, though considered a true isolate, is ironically the least problematic of these. It is transparently a member, not only of Pauwasi, but actually the Yafi-Emumu *subgroup* of Pauwasi. The failure of linguists to unite these languages at the earliest stages of classifaction can only be explained by the fact that they lie on a either side of the Indonesian-PNG border. To this group may also be added a couple of recently discovered neighbours, Kimgi and Lepki.

I would go further than this, however, by combining this expanded Pauwasi family with the Bulaka River-Trans Fly family of the southern coast, and the Kehu language of western Papua (formerly Irian Jaya). Kehu is problematic. The language is known only from a single handwritten SIL survey sheet. I have a copy of this, and the handwriting is barely legible. The list is also incomplete, for instance lacking numerals and pronouns. The language is also considered almost extinct. The only good thing to be said about it is that it is spoken in an area shown in most language maps as uninhabited. Indeed, it is true of New Guinea as a whole that most of the areas once thought uninhabited are now proving populated. In some cases the new discoveries merely add to known groups. Other examples, like Kehu, and Doso further east, are much more difficult to place. What follows is a collection of examples selected to support the affiliation of Kehu with the Bulaka-Trans Fly and expanded Pauwasi groups. A fuller demonstration of this expanded Pauwasi (Yuri excepted) and its connection with Bulaka-Trans Fly must wait for another time. And, who knows, it may turn out to be wrong!

Fig. 1 at the end of this paper gives approximate locations for the above languages.

'arrow'

Kehu: **sɛbalyo** 'arrow'
WAIA-KIWAIAN: South Kiwai **soba** 'arrow'
PAHOTURI: Idi **təbəl**, Agöb **təbəl**, **tabor** 'arrow'
MOREHEAD: Tonda (Blafe) **d̪upʌɾ**, **t̪upʌrr** 'arrow', Kanum (Yanggandur, Onggaya, Tomer) **supal** 'bow'
BULAKA-RIVER: Yelmek **söp** 'spear'

Also includes Oksapmin **dup(a:)** 'hunting bow'?

?'belly, stomach'

Kehu: **kut** 'stomach'
Molof **kau**, Usku **ku** 'belly'

'cassowary'

Kehu: **mbuoli** 'cassowary'
MOREHEAD: Kanum I (Yanggandur, Onggaya, Tomer) **mpɒwər ~ mbawur**, Kanum II (Tamer) **upɒwru** 'cassowary'

Further afield, though, outside the group postulated here, there is also the Toricelli language Yis **pawur** 'cassowary'

'canoe'

Kehu: **ɛpɛlo** 'canoe'
WAIA-KIWAIAN: Bamu **pe**, Wabuda **pere**, South Kiwai **pe** 'canoe'
MOREHEAD: Kanum I (Yanggandur, Onggaya, Tomer) **ɓər** 'canoe'

'dog'

Kehu: **unduoli-yi** 'dog' (note presence of **-li** elsewhere: 'cassowary,' **duli-yi** 'tree kangaroo')
MOREHEAD: Kanum II: Rawa Biru **nduwɒl**, Tomerau **ndowal**, Kurkari **ndowal**, Tamor **nduwəl**, Kanum (Sota) **ntuwäl** 'dog'

'eat'

Kehu: **yiadon-sembia** 'drink,' **səka-sembia** 'eat'
Tofamna: **sembe ~ sempe**, 'eat'

'kangaroo, wallaby'

Kehu: **anduku-li** ('see 'dog' above for **-li**)
BULAKA-RIVER: Yelmek, Meklew **doki** 'wallaby, kangaroo'

?'tree kangaroo'

Kehu: **duli-yi** 'tree kangaroo'
Kimgi **doˈar** 'rat'
EASTERN TRANS-FLY: Gizra **torla** (**ʔtɔːla**) 'wallaby'
PAHOTURI: Idi **tʰäl, ʈäl** Agöb **täl, taːl, ʈarə** 'wallaby'

MOREHEAD: Yei **dɔle**, 'rat, mouse,' **tawar** 'cuscus,' Tonda (Blafe) **ʈɑurri**, **tauri**, Peremka **tauwori**, Kanum II (Rawa Biru, Tomerau, Kurkari, Tamor) **tawri** 'wallaby,' Kanum (Sota) **tarar** 'rat'

'louse'

Kehu: **mbrɐm** 'louse'
Molof **lem**, Tofamna **bli** 'louse'

'mosquito'

Kehu: **paɪ-li** 'mosquito'
PAUWASI: Yafi **bai**, (Emumu) Yambrab **baiti** 'fly, n.'

Though note that in the northwest of New Guinea there is also Iau **ba**^{l} 'fly, n.'

'name'

Kehu: **yali** 'name' (?**ya-li** So many Kehu nouns end with **-li** that it is probably an affix of some kind. See also 'water')
PAUWASI: Yafi **ɟei**, Emumu **ei**, Yuri **ɛ**^{l} ~ **ɛ**^{l} 'name'
MOREHEAD: Tonda (Blase) **yɛ** ~ **yeː**, ?Kanum I (Yanggandur, Onggaya, Tomer) **yu**, Kanum II (Rawa Biru, Tomerau, Kurkari, Tamor) **yu**, Kanum (Sota) **yuər**, 'name'

The following may also belong with this set:

BULAKA-RIVER: Yelmek **ŋadöl**, Jab **ŋadel**, Meklew **ŋelele**; The first person pronouns in these languages are **ŋöl**, **ŋal** ~ **nar**, and **ŋöllo** respectively. If these words for 'name' include a fossilised first person possessor, this would suggest original forms along the lines of: Yelmek **ŋa-döl**, <***ŋal-ɟöl** , Jab **ŋa-del**, <***ŋal-ɟel** Meklew **ŋe-lele**, <***ŋal-ɟele**

The Toricelli language Siliput **ɟau** 'name' may also belong here, however.

'nose'

Kehu: **kolokɪn** 'nose'
PAUWASI: Emumu **mei-kol**, (Emumu) Yambrab **me-kor** 'nose'

An alternative derivation includes Emumu **kolk** 'bone,' whereby Emumu and Yuri 'nose' are < 'face-bone.' There is nothing in Emumu to confirm that **me(i)-** has the meaning 'face,' though Yafi has **me-pai** 'head' and Yuri **mi-pei**.

'star'

Kehu: **kuɛnto** 'star'
MOREHEAD: Kanum I (Yanggandur, Onggaya, Tomer) **ntɒ:**, (Kanum II) Rawa Biru, Tomerau, Tamer **ndu**, Kurkari **ntu**, Moie-Karigari **kundu**, Dorro (Namo) **konta**, **gunʒa**, Dungerwab Tsi **kondo** 'star'

Lepki **ɛndi**, and Kimgi **ide** may also belong here.

'water'

Kehu: **yili** 'water' (?**yi-li**, see 'name')
BULAKA-RIVER: Jab **yeli**, 'liquid.' In Yelmek and Jab 'water' is **yu**, and in Meklew **yü**.

Outside the proposed grouping there is also Pyu **ʔiʔ - yi** 'water'

In addition to the above there are a few striking similarities between Kehu words and those in language families adjoining Pauwasi (Arai, Amto-Musan, Kwomtari-Baibai and Toricelli).

'hair, leaf'

Kehu: **so** 'hair, head'
ARAI: Nimo, Nakwi **-so** 'hair, leaf, feather,' Rocky Peak **-sɔ - -su** 'hair'
Doso: **(gu-)su** 'leaf' (**gu-** 'tree')
TORICELLI: Bukiyip **šu-p**, Bumbita **suf**, Yampes **sup** 'leaf' (**-p** is a common suffix in Bukiyip; presumably the same in the other two Kombio-Arapesh languages)

'mountain'

Kehu: **kai-li** 'mountain'
Usku: **ke**, **ki** 'mountain'
Amto **kai** 'mountain'

'walk'

Kehu: **san(-sime)** 'walk' (**-sime** is an almost universal verbal marker)
ARAI: Nimo **sanʌ** 'walk'

There is good reason to think that Arai, Amto-Musan and Kwomtari-Baibai form a group. Whether these last few examples demonstrate that this group belongs in turn with the proposed Pauwasi-Trans Fly group, and what this would mean for the relationship of Kehu to this expanded whole and its parts, is a matter requiring further investigation. This applies equally to the possibility that the Toricelli phylum should also be included.

The reason for including this particular proposal rather than some other is that the location of Kehu and the Trans Fly-Bulaka River languages is consistent with the family having originally been spoken along the (presumably drier and more open) plains either side of the central mountains of New Guinea. Much of this presumed ancestral homeland is now occupied by speakers of other languages, whose present-day distribution suggests the same east-west axis, except that these later movements were probably coastal.

Returning finally to the possibility of an earlier peopling of Australia via New Guinea, is there any evidence for an appropriate substrate? Possibly. This is not something I have explored at all, so I will confine myself to this one dubious example.

'fire, tree'

Tofamna **we** 'fire,' **we-li** 'tree'
PAUWASI: Dubu **we** ~ **wi**, Tuwei **we**, 'fire,' **we-mu** 'tree'
TORICELLI (Wapei-Palei): Olo, Yau **weli**, Yis **wəti** ~ **weti** 'fire'
YAGENON (Northeast New Guinea): Yabong, Ganglau, Saep **wi** 'tree' (though this is sufficiently restricted within NENG for it to be seen as a very recent innovation)
TASMANIAN: NE, ME, SE **wi:(na)** 'tree'
AUSTRALIAN: Dharumbal [Terrill] **wi**, [Holmer] **wiŋa**; Muruwari **wi:**; Punthamara, Kalali **wi**, Wangkumara, Malyangapa **wiyi**; Yuwalraay, Gamilraay, Ngiyambaa **wi:**, Wiradhuri **wiŋ**; Kolak-Ngat, Woiwurrung, Thagungwurrung **wiŋ**, Djadjawurrung **wi**; Warrnambool, Wuluwurrung **wiŋ** all 'fire'

Vaclav Blazhek included the above (plus other possible reflexes in families further afield) in a collection of global cognates. Alas, I cannot lay my hands on the citation just at the moment, but I believe it dates from 1989.

I have one other curiosity to offer, which may have no probative value at all but is interesting all the same. In the southeast of Australia there are a number of communities whose self-name is also the word for 'no.' For instance,each of the following language names means 'no' in that language: Madi-Madi, Nari-Nari, Wemba-Wemba, Wadi-Wadi, Yota-Yota, Yabula-Yabula, Wakka-Wakka, Guwar, Goeng-Goeng, Goreng-Goreng. Finally, the word for 'no' in Gamilraay is **gamil**. This pattern is not found elsewhere in Australia, nor is it found at all in New Guinea, except for a small group of languages in the northwest of Papua-New Guinea. Some belong to the Sepik phylum, others to the Wapei branches of Toricelli:—

WAPEI-PALEI: Ningil **ŋgal**, Alu **alu**, Au **au**, Yis **yis** ~ **yes**, Aru **əru** ~ **oru**, Bragat **braket**, Aruop **arop**, Nambi **näbi**, Aiku **yiko** 'no,' Kayik **kʌ:yık**, 'not.'
WEST WAPEI: I have no word for 'no' in the One language, but in the closely related Aunalei language 'no' is **oni**.
SEPIK: Awtuw **autu metɛn**, Karawa **karowə**, Bouye **bowie?**, **bouyɛ**; Mehek **mehek**, Pasi **basi**; Namie **nəmia** 'no'

There is no question of these languages forming a genetic unity—the Australian are clearly Australian, the Sepik and Toricelli are clearly Sepik and Toricelli—but in the light of what Peter Sutton said about adopting the language when one "adopted" the land, might this nevertheless be a survival from some very ancient contact event?

The Biogenetic Implications

I concluded my mini-talk with a plea for much more linguistically-targetted biogenetic data. Peter Underhill pointed out that the Basques are no different, genetically, from their neighbours and that my "hit-list" could easily be just as disappointing. Leaving aside the possibility that Basque is the sole survivor of a much more widely spoken language family whose speakers adopted the languages of their conquerors, and that the "Basque mutation" is actually found across the whole of western Europe, the crucial fact is that we are only able to discuss Basque genetics in this way because we have Basque genetic samples! I say, let's have the samples, and even if they tell us nothing, at least we looked.

Ideally, I would like to see samples from speakers of every non-Austronesian language in the region, but a good start would include samples from:

Halmahera
North and South Bird's Head
Lower Mamberambo valley
Northeast New Guinea (Madang-Adelbert languages)
New Britain
Bougainville

Indeed, this is an impossible list to compile; it is so much easier to say what we don't need. Basically, if they haven't been sampled already, sample them!

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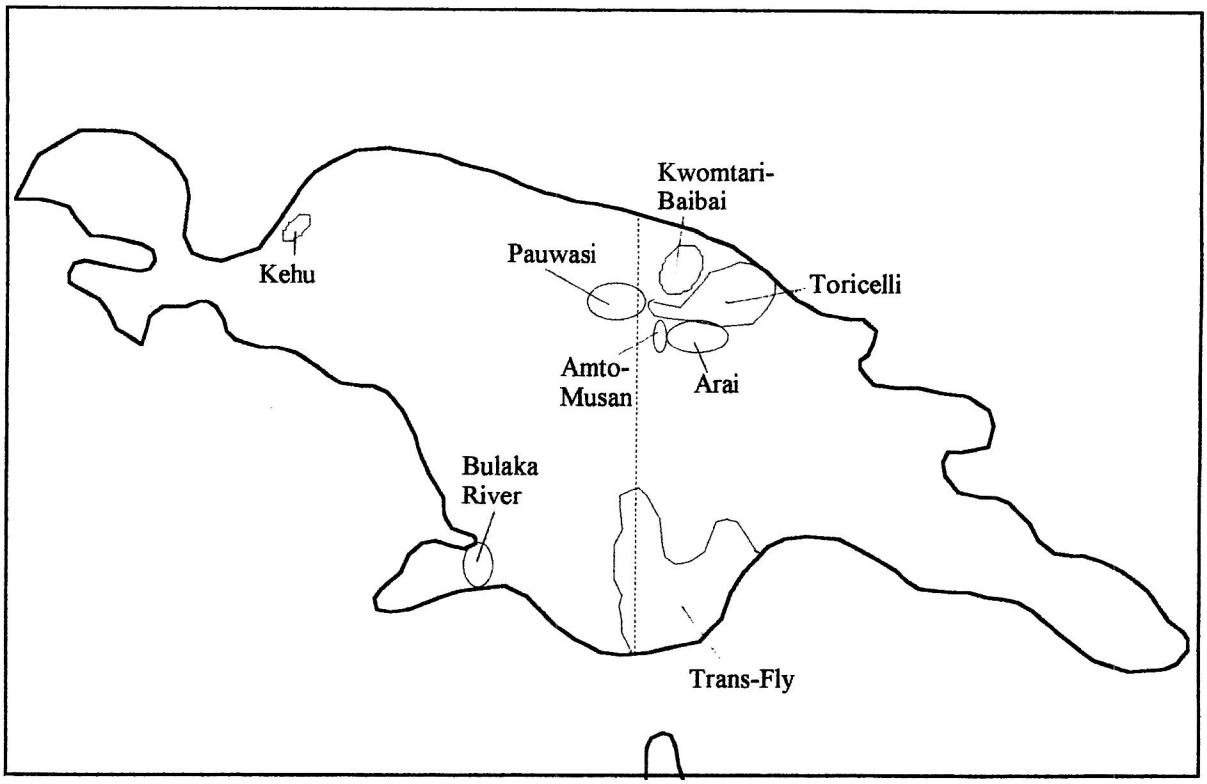

Fig. 1 Approximate locations of language families discussed under the heading 'A New Grouping in Central New Guinea?'

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Was There Australian Substratum in Dravidian?

Václav Blažek
Masaryk University

1.1. Dravidian languages have been compared with many language families. In recent times the most promising external comparisons have been presented by Menges (1977), Vacek (1983, 1987) and G. Starostin (2005) with Altaic, Tyler (1968, 1990) and Marlow (1981) with Uralic. Interesting hypotheses are presented also by McAlpin (1981 and older papers) with Elamite, Fähnrich (1981) and Boisson (1987) with Sumerian and Fähnrich (1965) with Kartvelian (including Northern Caucasian). The question of connections with Indo-European was discussed recently in IJDL (Southworth 1982: a reconstruction of common "proto-language" on the basis of English and Tamil!) and contemporarily also criticized (e.g. Rhedin 1985). These hypotheses are not all mutually exclusive, and they can be interpreted from a Nostratic perspective (Illič-Svityč 1971, 1976, 1984, Aalto 1980, Dolgopolsky 1984, Bomhard 1987a, b, and of course, the cited Menges, Vacek and Marlow). It is a pity that the partial comparisons of Dravidian with Afroasiatic are rather neglected. The contributions of Homburger (1954, 1957; Somali and Egyptian respectively vs. Dravidian) and Samsuddin (1972: Semitic vs. Dravidian) were very questionable, since they were based on direct comparisons of the individual, usually living, languages. On the other hand, the comparison of Dravidian and Afroasiatic on the level of the reconstructed proto-languages gives much more promising results (cf. Blažek 2002). Other distant hypotheses like Dravidian-Wolof (Ndiaye 1977) or Dravidian-Japanese (Ohno 1983) are implausible, if one accepts the uncompromising positions of their authors. But the last one is quite acceptable in the Nostratic context.

1.2. The question of the external connections of Australian languages remains open. During the last 150 years the following hypotheses of genetic relationship have been formulated (cited according to Dixon 1980): Austronesian - Latham 1845 (together with Papuan), Pratt 1886, Schnorr von Carolsfeld 1890 (together with Papuan and Andamanese), Rivet 1927 (together with Tasmanian and Austroasiatic); Papuan – Shafer 1965, Laycock 1973, see Wurm 1982: 256; Dravidian - Prichard 1847, Caldwell 1856, 1913/1956: 75-77, 395/, Müller 1882: 95-98, Dixon 1980: 236, 488-489, also Trombetti 1923: 63-68 (together with Papuan and Andamanese, *i.e.* Indo-Pacific in terminology of Greenberg 1971); Sub-Saharan African – Bleek 1872, Curr 1886-87, Trombetti 1927; Munda – Gabelentz 1891, Thomsen 1892, critically Konow 1904; Indo-European (and even Fenno-Ugric!) - Brandenstein 1970; Amerindian (Čon → SAndean) – Rivet 1925.

1.3. The data of physical anthropology at least partially confirm the Indo-Pacific, Munda and Dravidian hypotheses. But all cases can be explained as an influence of Australoid substrata or via convergence ('Negritoes'). The aim of this paper (first draft 1988, published 1992) is to verify the Dravidian-Australian hypothesis, at least peripherally in the context of the Indo-Pacific parallels. Lexicons of the last remnants of the original languages of the Indian subcontinent – Nihali and Vedda dialect of Sinhalese – were also analyzed.

2.1. All Australian languages have been considered to be related (Wurm 1970: 7). The most recent estimate of the age of human artifacts in Australia varies from 60.000 to 70.000 years BP (Northern Territory: **Malakunanja II** 61.000 + 9.000/-13.000, 52.00 + 7.000/-11.000; **Nawalabila I** 60.300 ± 6.700, 58.300 ± 5.800 BP; Western Australia: **Rottnest Island** 70.000 + 10.000/-20.000 (all dated with thermoluminiscence).[1] The oldest known

[1] See http://en.wikipedia.org/wiki/Australian_Aboriginal_Prehistoric_Sites; www.stonepages.com/news/archives/000236.html . .

human remains, the ritual ochre burial found near the dried Lake Mungo ("Mungo III") in South East Australia, is dated from 42.000-45.000 to 62.000±6.000 BP (P.Brown 2005: "Lake Mungo" - see www-personal.une.edu.au/~pbrown3/LM3.html; Adcock et al. 2001, 537-542; Bowler et al. 2003, 837-840). If the first Australians brought the languages which became the ancestors of all later languages, we find here a unique natural laboratory manifesting practically undisturbed development without external influences. The effects of recent contacts with Indonesians in the Arnhemland or Papuans in the Northern Cape York Peninsula are purely local, and so negligible. The influence of Tasmanoid substratum on languages of Victoria is evident (Capell 1956: 94), but limited only to that region. Other old contacts are only hypothetical (Wurm 1970: 16; Brace 1980: 151; Wurm 1982: 255-256). If the age of divergence of the single Australian proto-language corresponds with the beginning of the presence of man of Australoid type on the continent, we have one of the oldest macro-phyla here. For comparison, the evaluation of the age of the Nostratic macro-phylum is *c.* 15.000 years.

2.2. The so-called "Common Australian" (CA) postulated by Capell (1956: 67 – cf. Dixon 1980: 99-100) represents the universal lexicon common to most of the languages. Capell established more than 50 proto-lexemes with quasi-reconstructions. But CA cannot be identified with proto-Australian. Some scholars identify CA with the most wide-spread Australian macro-family, namely Pama-Nyungan (e.g. Wurm 1970: 18). Using the "classical" glottochronology, O'Grady (1966) dated the disintegration of Pama-Nyungan to c. 8.000 BP, McConwell to c. 6.000 BP, Evans & Jones (1997) only to 4000 BP. The latter scholars localize the Pama-Nyungan homeland "in the area stretching between the Roper River across the Barkly Tableland into north-western Queensland" (see Dixon 2002, 52-53, who rejects the genetic unity of Pama-Nyungan). Although CA is far from corresponding to proto-Australian, today it represents the oldest reconstructible proto-language of Australia. On the other hand, so-called regional vocabularies can reflect older, pre-CA language strata and so they should also be analyzed.

Abbreviations of languages:

A Australian; And. Andamanese, C Central, CA Common Australian, Dr. Dravidian, E East, EH East Highlands, IP Indo-Pacific, Kartv Kartvelian, M Middle, N North, p proto, PN Pama-Nyungan, R. River, S South, Tasm. Tasmanian, TNG Trans New Guinea Phylum, W West, WD Western Desert.

Grouping of Dravidian:

I – Tamil, Malaylam, Irula, Kurumba, Kota, Toda, Kannada, Kodagu; II - Tulu, Belari, Koraga; III - Telugu; IV – Kolami, Naiki; V – Parji, Gadba; VI – Gondi, Konda, Pengo, Manda, Kui, Kuwi; VII – Kurukh, Malto; VIII – Brahui.

Abbreviations of authors:

C Capell 1956, D Dixon 1980, Di Dixon 2002, DEDR Burrow & Emeneau 1984, F Foley 1986, G Greenberg 1971, Ge Geiger 1935, IS Illič-Svityč 1971, 1978, 1984, K Kuiper 1962, Kl Kluge 1938, OG O'Grady 1966, OH O'Grady & Hale 2004, Pe Peiros, S Schmidt 1912-18, SC Schnorr von Carolsfeld 1890, Sh Shafer 1965, SS Sugathapala da Silva 1972, T Trombetti 1914-19, Y Yallop 1982, Z Zvelebil 1970.

Comparative evidence.

3.1. **Pronouns and other grammatical words.**

Dixon (1980: 353) reconstructed the following proto-Australian system of personal pronouns:

Person	1	1/2	2
Minimal series	**ŋay*	**ŋali*	**ŋin*
Augmented series	**ŋana*	**ŋaNH-* (??)	**NHurra* (rarer **NHu(m)baLV*)

If we accept the alternations of Dr **y-/*ñ-/*n-* before **-ă-* and **n-/*0-* before **-ĭ-* as reflexes of the sequences **ñă-* or **ñĭ-* respectively (Illič-Svityč 1976: 89), we get the following system:

Person	1	2
Sg.	*ñāṉ	*ñīṉ
Pl.	*ñām/n	*ñīr / *ñīm / *num

(see DEDR 5160, 3684, 5154 & 3647, 3688).

Trombetti (1923: 82) demonstrated the isomorphism of Dravidian personal pronouns with their Australian counterparts, using as the example the pronouns from Narrinyeri (Pama-Nyungan macro-family): *ṅān* "me": *ṅām* "we", cf. also *nōm* "you" (pl.). He also quotes the Papuan language Dabu (Trans-New Guinea phylum) with the opposition *nana* „I" : *nami* „we".

Only the following two CA interrogatives have certain cognates in Dravidian:

(i) CA **minaŋ* "what" (C78) = **miNHa* (D376):

Dr.: Tamil Kaikadi *midād* "what", Burgendi *mi* id. (K329; IS II, #300).

(ii) CA **Nhaa* "what" (D376) and / or CA **ŋani/a* "who" (C78) = **ŋaan-* (D373); IP: EH **ma* "what" (F 274):

Dr.: Parji *naṅ* "why", *nā, nāto* "what" (K330), NDr. **nēr* "who?" (DEDR 5151; Z131).

The most wide-spread negation in the Australian languages is the form in *m-*: cf. Nyulnyul (= "King's Sound") *māla*, Gunwinggu (= "Roper R.") *malo-malo*; PN: Kana *malo*, Tura *ma(r)ola*, Kaurna (= Meyu) *mulunte*, *ma(d)lana*, Arabana (Nulla) *maiello*, Kulin (WNW) *maal*, Dyirbalic (= "Halifax Bay") *maia*, *mund'u*, Yuin *meira*, *murro*, etc. "no, not" (S), Ngumbin: Walmatjari *maḷal* "nothing" (Hudson, Richards 1969: 173), pNgayarda **miṭa* "no, not" (OG 106):

NDr. **mal-* "not"; "to be not", cf. also Tamil *–mal* in negative adverbial suffix *–āmal* (DEDR 4743), while Gondi *manni*, *minni* 'negative particle', cited by Trombetti (1914-19, 411) together with A and data of other phyla, rather do not belong here, cf. Andronov 1982: 188.

3.2. **Numerals**

"1": (i) A: Iwaidjan (Cobourg Peninsula): Iyi (= Limpapin = "Popham Bay") *motu*; PN: Kana: Kungarditchi *matina*; Yuin-Kuri: Monero *mittong*, Wollongong *mittung*; Kulin: Witaoro *koen met*, Jibberin *koinmet*; Narrinyeri: Kemendok *meta*, Marawra (= "NW bend of the Murray R.") *mata*, etc. "1" (Kl) || Dr **mottam* "sum, total, whole" (DEDR 5119: I, III, VI).

(ii) PN: SW **paru* "1" (O'Grady1966:115) || Dr **pattu* "item" (DEDR 4507: III, V).

"2": CA **gudjara* "2" (C77) = **gujarra* (D100) = pA * *guDHarra* (D153) || Dr. **kirta* "one-fourth" (DEDR 1553: I, II). The comparison is valid only, if the metathesis operated in Dravidian, cf. the metathetical forms in A: Wunamara, Mitakudi (Bundyil → PN) *kurto* "2" (Kl 112). The semantical shift "2" → "4" is known e.g. from the A family Bungandidj (→ PN): Wannikin *kourrapong*, "Hopkins R." *kirtpan*, *kurtpun* "4" (Kl 73, 74), probably originally "2 x 2" or Pinjara (SW → PN) *bula* "4; plenty" (Kl 53) < CA **bula* "2" (D100). There are promising IP parallels, if we accept a dropping of the initial consonants, similarly as in some of the A languages, e.g. Aranda, *ḏarā*, Alayawara *aṯə́ra*; Walbiri *ṭirama*, etc. (all PN), Wulna (→ Laragiyan) *toloya* "2" vs. IP: EH **tata* > Fore *tara*, Yagaria *lole*, Awa *(tɔ)tare*, Tairora *taara-* "2" (F 274); Tauata (→ Goilala → ETNG) *a-tolo-(p)ái*, etc.; And.: Bea *åko-tåro-buya*, Kol *o-tara-buwe*, etc. "other" (Trombetti 1923: 71).

The second root for "2", CA **bula* (see above) has more probable IP cognates: Ndani *bere,* Sauweri *pere* "2" (→ Pesexem family → CWTNG; see Sh 349); Tasm. *pooalih*, *piawah*, *bura*, *bourai*, *boula* (Kl 50); And.: Bea *ik-pāūr-da*, Bojigiab, Kede *irpól,* Chariar *nérpól* "2 (pair)" (SC 259), Juwoi *re-pāūr*, Bale *id pāūrotót* "2" (Kl 147).

Interesting also are the isolated forms of numeral "two" in Dyirbalic (= "Halifax Bay" → PN) *yakka*, *yekka* (S), corresponding with "2" in some of the Papuan languages: Kai *yahe*, *yeyahe*, Boeng (= Poom) *yaheka* "2" (→ Huon Gulf family → CWTNG; see Trombetti 1923: 71, 417).

"3": A: PN: WMiriny *mangura*; Kaurna (= Meyu → SW) *manguri*, *mungwina*; Mambura *mundula*, etc. (S) || Dr. **mūṉ-* "3" (DEDR 5052; Andronov 1978: 241).

"4": A: PN: Narrrinyeri (= "Murray R.") *nailko* "4; much" (Kl 69); Gugadj (= "Ravensbourne Creek") *nalira* "4" (Kl 112); Guwa (= "Diamantina R.") *nadera* "4" (Kl 115); Bangarla (= "Gawler range") *nulla* "4" (Kl 59); etc. (Trombetti 1923: 83) || Dr. **nāl-* "4" (DEDR 3655; Andronov 1978: 242), cf. also Nihali *nālku*, *nālo* "4" < NDr.

3.3. **Lexical parallels between Common Australian and Dravidian.**

1. CA **miriŋ* "eye" (C73) = **mil(i)* ~ **miil* (D100; details see Di. 106); ?IP – see SC 272 ||
Dr. **miṟi/viṟi* "eye, eyeball" (DEDR 5429: I, II, VI).

2. CA **binaŋ* "ear" (C72) = **bina* (D 100) and / or **wina-/* wuna-* "to hear" (C76); IP – CWTNG: Mbowamban **pint'u* "to hear" (Sh 370) ||
Dr **viṉ-* "to hear" (DEDR 5516: I, II, IV, V, VI, VIII & VIII) & **miṉ-* (VII). See T 365.

3. CA **guli* "to hear", cf WDesert *gulga* "ear" (C 76), Nunkaberri *korulka* (SC after Curr), cf. Kuri *kuri, guri*, Awabakal *gure*; Wailwun (→ Wiradhuric) *guringera* "ear"; Mabuiag *kaura, karūsa* id. (S), *kareŋemi* "to hear" (Capell 1971: 672); IP – TNG: Kiwaian **gare* "ear" (Sh 316); Tsaga *kāre* id. (Sh 375); ?And.: Oenge *ik quágé* id. < **kwarge*? (SC 277) ||
Dr. **kuṟ-* "ear(-ring)" (DEDR 1823: I, II, IV, VI).

4. CA **dawa–* "mouth" (C 73); **jawa* "mouth, jaw" (D100) < pA **Dhaw(a)* ~**Dhaa* (D 407; Di 109), cf. SNarrinyeri *tore*; Gumbaingerri *d'ullin* "mouth" (S); Luridja *tdar* (Basedow), pNgayarda **taRa* id. (OG 112) ||
Dr **tuṭṭi* "mouth, lip" < **tuR-ṭi*, cf. Malto *toro* "mouth" < **tuṟ-/tur-* ? (DEDR 3296: I, II, VI, VII).

5. CA **lira–* "tooth" (C74) = **dirra* (PN) ~ **lirra* ~ **rirra* (D 100, 223; Di 108-09, 126); IP – cf. SC 275; Usher 2002, 79 adds Lower Sepik/Yimas *tïrïng*, Chambri *sëlangk*; South New Guinean **terVk*; Trombetti 1923: 89 also compared Munda: Korwa *tirīn*, Kurku *tīring* "tooth" ||
Dr. **teṟṟ-* "tusk" (DEDR 3448: I).

6. CA **dalan* "tongue" (C74) = **jalany* (D100) < pA **DhalaNY* (Dixon 1970: 92; Di 108: **dhalanj*); IP: Tasm *tullana, tölāna* "tongue" (C93; see also Usher 2002, 79); And. **-tal-* id. (SC 275) ||
Dr.: Kurukh *tatxā* "tongue" < **tatt-/taṟṟ-*, Malto *taṛte* id. < **taṭ-/taṟ-* (DEDR 3064: VII).

7. pA **maRNu* "neck" (D 484): e.g. Daly R.: (N) Tyeraity *men^{y}uk*; (E) Yungor *men^{y}*; (W) Maridan *manṯi* "neck" (Tryon 1974, 270); PN: pPama **manu* id. (Alpher 1972: 82) ||
Dr. **maṉṉ-* "throat, neck" (DEDR 4779: I).

8. CA **mara–* "hand" (C75) = **mara* ~ **mala* (D100; Di 106-07), cf. pNgayarda (→ SW → PN) **maRa* "hand" vs. **mara* "wing" (OG 113, 99) = **mara* "hand" vs. *marra* "wing" (OH 74); IP – cf. G 814; Tasm. NE *mönenga* "arm" (Usher 2002, 78) ||
Dr. **mār-* "side of body, wing, arm" (DEDR 4820: VI) & ?* *mār-* "chest, fathom" (DEDR 4818: I, II).

9. CA **daraŋ* "shin" (C74) = **jarra* "thing" (D100) < pA **dharra* (Di 107); IP – see SC 278 ||
Dr. **tāḷ / tāṟ* "leg, thigh, stem" (DEDR 3185: I, II).

10. A: Daly R.: Mullukmulluk *böngöl*, Tyeraity *böngöl*, Maranunggu *biŋgar* "knee" (Tryon 1974, 268); Gunwinyguan **puN* "ankle, knee" (Pe 439); pPN **buŋgu* "knee" (Dixon 1980: 223); IP – see Trombetti 1923: 66; G 42 ||
Dr. **vaṅk-* "knee, calf of leg" (DEDR 5249: I, V).

11. CA **gunaŋ* "excrement; anus" (C72) = **guna* "faeces" (D100; Di 107) ||
Dr. **kuṇṭi* "anus", cf. Kuwi *kūna* "buttock" (DEDR 1693A: I, III, V, VI).

12. CA **gumbu* "urine" (C74; D 100) ||
Dr. **kumpi* "penis" (DEDR 1749: I, II).

13. CA **maji* "vegetable food" (C75) = **mayi* (D100) ||
Dr. **māy-/*mēy-* "to graze, eat grass" (DEDR 5093: I, II, III, IV, V, VI, VII, VIII).

14. CA **waru* "fire" (C75) = **waru* ~ **warlu* (D100; Di 115: **waru*); ?IP – see SC 265 ||
Dr. **vaṟ-* "to fry" (DEDR 5325: I, V, VI). The semantical shift like in A: Ungarinyin *wari* "to burn", Baddola, Guamu *wara* id. (C 79).

15. CA **na* (C77) < pA **Nhaa-ŋ* "to see, look at" (D 403-04; Di 124); IP – see G 862 ||
Dr. **nōkk-/nōṭṭ-* "to see, look at" (DEDR 3794: I, II).

16. CA **ga-* "to take, bring, carry, held" (C76) < pA **gaa-* "to carry, bring, take" (D 404; Di 118) ||
Dr. **koḷ-/koṇ-* "to take, seize, bring, carry" (DEDR 2151: I, II, III, IV, V, VI; Z 134).

17. CA **ma-* "to take", also "to do, make" (C 77) < pA **maa-n* "to hold in hand" (but cf. Walmatjari *ma-n* "to do" and Ngiyanba *ma-l*, Jabugay *maa-l* "to do, make"; D 405; Di 119) ||
Dr. **maṇṇ-* "to do, make, create" (DEDR 4685: I).

18. CA **ni(n)* "to sit" (C 77) < pA **Nyii-n* (D 407; Di 119) ||
Dr. **nil / *il* "to stand, stay" (DEDR 3675: I, III, IV, V, VI, VII) & ?**nī-* "to live" (DEDR 3689: VI).

19. CA **da* "to eat", also "to drink" (C 76: *"to mouthe") < pA **Dha-l* (D 405-06; Di 121) ||
Dr. **tăr-* "to swalow, drink, eat" (DEDR 3174: III, V).
20. pA **DHa(a?)-n* "to stand" (D 407; Di 119); IP – see SC 281; F 273: EH **ti* id. ||
Dr. **tar-* "to stay, stop, standfirm" (DEDR 3094: I, II).
21. pA **DHu-n* "to put" (D405); IP – see G 863; F 273: EH **to-* id. ||
Dr. **tŭ-* "to lie down, sleep, sit" (D 3291: I, V, VI, VIII).
22. CA **wa–ga-* "to talk" (C 77; D 481; Di 123) ||
Dr. **vāṅk-* "to call, sound" (DEDR 5337: I, III).

3.3.1. **Lexical parllels between Australian regional vocabularies and Dravidian.**

3.3.1.1. **Body parts.**

23. A: PN: SW: Kaurna (= Meyu), Banggarla *kaka*, Yarrawurka, Wudjari (= Nonnga) *koka*; Gamilarai (→ Wiradhuric) *goga* "head"; Mabuiag *kuiku*, *kuīk* id. (S); IP: Tasm *cuegi*; Cru-Lopiko (→ Huon → CWTNG) *kakao* "head" (see T 45-46) ||
Dr. **kuk(k)u* (DEDR 1630: VII).
24. A: PN: SW **maka* "head" (OG 115); Durubal *magul*; Dyirbalic (= "Halifax Bay") *mogir*, *mogil* "head" (S), Warrgamay *mugal* id. (D 100); IP: And.: Bea, Bale *mugu-*; Puchikwar, Juwoi, Kol *(-)mika-* "forehead" (T 420); other possible paralles in IP – see G 827, ## 27, 43 ||
Dr. **muk-* "face" (DEDR 5128: I, II, III, IV, V, VI).
25. A: PN: Yugambal (→ Kuri) *kopul*, *kapui*, SKuri *kobera*, MKuri *kamburrun*, SYuin *kabban*; Bigumbil (→ Wiradhuric) *kabui*, *kombure* "head"; SNarrinyeri *kope*, *kopi*, Kemendok-Yittha *kaap*; Bangerang (→ Yotayotic) *kowo* "nose" (S); pPama **kūwa* "nose" (Alpher 1972: 79) ||
Dr. **kopli* "mouth" (IV), Parji (V) *kuplo–g* "cheek" (DEDR 2114).
26. A: PN: Yugambal (→ Kuri) *bukia*; Bangerang (→ Yotayotic) *pōko*, *puko* "head"; mixed language between Gogaj (= Kogai) & Barku *bakka* "mouth" (S); ?IP: And.: Bea *bāng-da*, Bale *boāng*, Puchikwar *pōng-da*, Juwoi *pōng-*, etc. "mouth" (see T 389) ||
Dr. **pukk-* "cheek, mouthful" (DEDR 4242: I, III, IV, V, VI, VII).
27. A: PN: Karnic **ma(r)na* "mouth"; NNarrinyeri (low Murray) *munno*, Yittha *mu(r)n*; Gudadj (→ Paman) *munu*; Yuin-Kuri *mundo*; Yaroinga (→ Arandic) *mēna* "mouth" (S); IP – see T 420; G 861-862 & G 827 ||
Dr. **muṉ-* "(in) front" (DEDR 5020: I, II, III, IV, V, VI, VII, VIII).
28. A: PN: SW: PNgayarda **kaṭa(RA)* "cheek, jaw, temple" (OG 104); Bangerang (→ Yotayotic) *katta* "mouth"; Muk Thang (= Kurnai) *kāt'* id.; Mabuiag *guda/o* id. (S) ||
Dr. **kaṭṭ-* "beard, chin" (DEDR 1156: I, II, III, IV, V, VI).
29. A: PN: Ulaolinya-Wangkadjera (→ Karnic) *milka* "tooth" (S); perhaps also Laragiya *mila* "tongue" (S); PN: Bundyil *mulli*; Jalanga (= Yelina) *mileri*; SW: "Peoplemen tribe" *merning* id. (SC after Curr); IP – see SC 275; Sh 383 ||
Dr. **muṟ-* "tooth; smiling" (DEDR 5014: I).
30. A: PN: Guwa (→ Maric) *bewi* "mouth" (S); IP – see G 860 ||
Dr. **vāy-* "mouth" (DEDR 5352: I, II, III, IV, V, VI, VII, VIII).
31. A: PN: pNgayarda (→ SW) **waŋkar* "throat" (OG 102); Arabana (→ Karnic) *wuŋku* id. (O'Grady, Klokeid 1969: 307) ||
Dr. ** vaṅk-* "palate, tongue" (DEDR 5470: V, VI), e.g. Gadba *vanger* "palate".
32. A: Nyulnyul (= "King's Sound") *mogon*; PN: Dyangadi (→ Kuri) *meggi*; Gogaj (= Kogai → Maric) *monga*; SW: Banggarla *manga*, WLuridja *munga*, NNyungic *mangara*, etc. "hair" (S); IP – see Trombetti 1923, 69 ||
Dr. **makir* "hair" (DEDR 4707: I, VI).
33. A: PN: Wiradhuric: Wailwun *walla*, Wongaibon, Wiradhuri *(w)uran*; SW: Yura: Kaurna (= Meyu) *wiľa, wuľa*; Barku *wuru, wulu*; Murrawari *woolba*; NWBundyil *walulu* "hair" (S); IP - see SC 272 ||
Dr. **uḷ-* "mane, hair" (DEDR 701: I).
34. A: PN: Emu-Mudjug *burrabee* "belly"; Dhudhuroa *birriwa*; EKulin *brimbrim*, *bīriŋ* "chest, breast" (S); SW: pNgayarda **puRi* "heart" (OG 108) ||
Dr. **pōra* "chest, breast" (DEDR 4592: I, III, VI).

35. A: PN: SW **kuṭuṭu* "heart" (O'Grady & Klokeid 1969, 305); with other transcription Luridja *kordude* (Basedow); ?Middle Paman: Wik-Mungan *ŋorta* id. (Brandenstein 1970, 626) ||
Dr. **kuṇṭ-* "heart, kidney" (DEDR 1693: I, II, III, IV, V, VI, VII).

36. A: PN: Yulngu (= "Caledon Bay") *báka* "shoulder"; Wakelburra *buka* "hand" (S) ||
Dr. **pVk-* "shoulder" (DEDR 4172: I, II, VII).

37. A: PN: Marowra *bi(r)na*, *brinna*; Ulaoliny-Wonkadjera, Kana (→ Karnic) *binna* "bone" (S); EVictoria *bi'riŋ* id. (C 81) ||
Dr. **purn-/*pūn-* "bone" (DEDR 4299: IV, V) and / or **peṛen-* id. (DEDR 4418: VI).

38. A: Gunwinyguan **per-/*pir-* "hand, finger" (Pe 418); PN: SW **pirri*, but Banggarla *birri* (O'Grady & Klokeid 1969, 304), Luridja *perri* "fingernail" (Basedow); IP: Kire (= Giri → Sepik-Ramu) *far* "finger" (Stanhope, *Anthropos* 1972, 65) ||
Dr. **veral/ḷ* "finger" (DEDR 5409: I, II, III, IV, V, VI).

39. A: PN: SW **muṭi* "knee" (OG 115), cf. also Luridja *mordi* = */moḍi/* id. (Basedow) ||

Dr. **muṭṭu* "knee, elbow" (DEDR 4935: I, II, III, IV, V).

40. A: ?Daly R. (N) Mullukmulluk *möRöt*, Tyeraity *muRu*; (W) Marithiel *muwa* "bone" (Tryon 1974, 269); PN: SW: Banggarla, Wudjari (= Nonga) *mulali*, WLuridja *mala* "bone" (S) ||
Dr. **mūḷ-* "bone" (DEDR 5051: I, II, ?VII)

41. A: Gunwinyguan **kurac* "blood" (Pe 440); PN: SW: Tura *kuru*, Kaurna (= Meyu) *garu*; SNarrinyeri *krūwe*; Pallangahmiddang *koroo*; Mabuiag (Saibagal) *kirerō* (S); Birria (→ Maric) *guruga*; Arabana (→ Karnic) *guru*; Kulin *gurug*, etc. "bloood" (C 82); IP - see Trombetti 1923, 67; 1927, 165: ETNG: Koiari *korika*, Koita *kere-kerare* "red" and Sh 362: CWTNG: Gafukuan **kora-* "blood" ||
Dr. **kuruti* "blood; red" (DEDR 1788: I, II).

42. A: PN: pPama **kamu* "blood" (Alpher 1972, 74); Bungandidj *gammar*; Arabana (= Nulla) *ku(b)mari*, Diyari *kumari*, Wangkumara *guma*, *gomie*, Badjiri *gumaru*, Ulaolinya-Wangkadjera *gimba* (all Karnic); Darkinyung, Awabakal *kumara* (→ Yuin-Kuric); Bigumbil (→ Wiradhuric) *gima*; Bayeli (→ Wakka-Kabi) *kumi*; Dyirbalic *koma*, etc. (S) ||
Dr. **kem-* "red" (DEDR 1931: I, III).

43. A: PN: Gugu Yimidhir (→ Yalanjic) *golon* "penis" (Breen 1970, 43); SW: Pintubi *kaḷu* id. (Hansen 1969, 154), Luridja *kürlu*, Ituarli *körlu* id. (Basedow) ||
Dr.: Nilgiri: Ālu Kurumba *gole*, Pālu Kurumba *gule* "scrotum" (Zvelebil 1985, 670: I).

3.3.1.2. **Human society**

44. A: Wulna (→ Laragian) *mēangena*; NDjeragan (= "Ord River") *mŭnămbŭrri*; PN: Emu-Mudjug *müng*; Murrawari *mań*; EWakka *mean*; Yuin (NCoast) *myning*; Wiradhuri *mań*, *maiŋ*; Kolijon *mandef*; SW: Amandyo *amand'o*, Mirniny *miniŋ* "man" (S); ?IP: Kokila (SPapua) *amanaga* "man" (T 416) ||
Dr. **man-* "man, human being" > Tamil *mānt*, Parji *mañja*, *mañña*, Gondi *manja* (DEDR 4791) & **mant-* "men, people" (DEDR 4700: I, II, III, IV).

45. A: Daly R.: (W) Marithiel, Maridan *meri* "man" (Tryon 1974, 271); ?NDjeragan (= "Ord R.") *mălyara*; PN: Gogadj (→ Maric) *murri*, SNarrinyeri *meru*, *meri*; SEBungandidj *mar(a)*; Yuin (Inland) *murriń/ŋ* "(aboriginal) man" (S); Yarrawurka (→ Karnic) *murrowa*; Wiradhuri *murre-wangar* "child" : *wangar* "man" (T after Curr); Thura-Yura **miṛu* "adult man" (Simpson & Hercus 2004, 189); IP - see T 416-18 ||
Dr. **māṛ-* "young man/male" (DEDR 4764: I, II, III, VI, VII) and / or **măṛ-* "man, male" (DEDR 4756: VI, VII).

46. A: Daly R.: (W) Marithiel, Maridan, Marengar, Ami *muku* "woman" (Tryon 1974, 271); PN: Yuin (Coast) *mika* "man", *mega* "woman"; "Walsh R." (→ Paman) *moak*; Gowar (→ Durubalic) *mugi* "(aboriginal) man" (S), cf. Mbabaram (→ Paman) *múg* "man" (Dixon 1966, 117); IP - see G 826, 827 ||
Dr. **maka* "child" (DEDR 4616: I, II, III, IV, V, VI, VII, ?VIII), cf. Telugu *maga & moga* "male", *magova* "woman", Kolami *magyan* "husband".

47. A: PN: Jalanga (= Yelina) *eri*; Bundyil *yerro*, *yirrman & eerman* "man" (S; T 447 after Curr) ||

Dr. *ēṟu "male (of animal)", cf. Brahui *arē* "male individual, person, husband" (DEDR 917).
48. A: Iwaidjan (= "Cobourg Pen.") *koala, cloin*; SDjeragan *geraugen*; PN: Pallangahmiddang *gerree*; Gunggari-Birria (→ Maric) *karkura*; NEBungandidj *koloń*; Kulin *kuli(n)*; Kuri **kuri*; Warluwara (= Walookera → Wagaya-Warluwaric) *kā́ro*; Mabuiag *garka(i), garakatsi*; Amandyo (→ SW) *karu* "(aboriginal) man" (S) ||
Dr. *kuṟ- "man of a primitive tribe of mountaineers" (DEDR 1844: I, II, III, VI).
49a. A: ?Daly R. (N): Mullukmulluk *pen* "vulva" (Tryon) 1974, 269; PN: Guwa (→ Maric) *buńana*; Bundyil *buńo*; Karuwali (→ Karnic) *punja, punga* "woman" (S); IP - see SC 269; G 858 ||
Dr. *peṇ "woman" (DEDR 4395: I, II, III, IV, V, VI).
49b. A: PN: Banggarla (→ SW) *wiinna*; Bangerang (→ Yotayotic) *wuńa*; Wiradhuric **winar*; NKabi *wanmoo*; Gogaj (→ Maric) *wyanbirra* etc. "woman" (S) ||
Dr. *vāṇi "wife" (DEDR 5348: VI).
50. A: PN: NKuri (Kattang) *kidn*; NKabi *keen*; WBungandidj *kinenul*; Luridja (→ SW) *kunga* "woman" (S); IP - see SC 270 ||
Dr. *kuṇṭa "slave, slave woman" (DEDR 1690: I, III).
51. A: Wulna (→ Laragiyan) *mungedma*; PN: Dyirbal *mangan*; NKabi *muni*; Jalanga (= Yelina) *minmeri*, etc. "woman" (S) ||
Dr. *miṇṭ- "unchaste, incontinent woman, whore" (DEDR 4858: I, II, III), cf. Brahui *miṇḍ* "bitch".

3.3.1.3. **Nature**

52. A: PN: Durubal *ŋalgal*; Bigumbil (→ Wiradhuric) *ŋolŋol* "wild dog" (S) ||
Dr.: Tamil *ñāḷi, nāḷi, ñeḷḷai, ñamali* "dog" (from the partial reduplication **ñañal*-?); Kurukh *allā*, Malto *ale* id. (DEDR 2916).
53. A: PN: Wakka *bugin*; Bangerang (→ Yotayotic) *pokko, pukka* "dog" (S) ||
Dr. *pokk- "dog" (I, II), but Tulu *bogre* id. (DEDR 4466).
54. A: PN: Karnic: Yarrawurka *pandi*, Karuwali *pande* "tame dog"; Dyirbalic: Nawagi (= "Halifax Bay") *bata* "dog" (S) ||
Dr. *paṭṭi "dog, bitch" (DEDR 3870: I).
55. A: PN: pPama **kuyu* "fish" (Alpher 1972, 79); Mabuiag (Dauan) *gi'jou*; Diyari (→ Karnic) *guja* id.; WD (→ SW) *gui* "meat" (C 79; cf. also T 44-45) ||
Dr. *kayy- "fish; sp. of fish" (DEDR 1252: I, III, IV, V, VI).
56. A: PN: Kairi (= "Nogoa R.") *bumba* (T 354 after Curr); Arabana (→ Karnic) *waMa*; SW: Ngaliya, Kukatja, Antikirrinya *wami*, Banggarla *wabma* "snake" (O'Grady & Klokeid 1969, 306; Simpson & Hercus 2004, 189) ||
Dr. *pāmpu "snake" (DEDR 4085: I, II, III, IV, V).
57. A: Nyulnyul (= "King's Sound") *walga*; "Ruby Creek" (Kimberley) *wolu*; PN: Amandyo (→ SW) *wala(nu)*; Aranda *alunga*; Ulaolinya-Yangkadjera *wolka, wiluka*; Yuin (NCoast) *wuru* "sun" (S) ||
Dr. *ul(l)- "day" (DEDR 677: IV, VII).
58. A: PN: Emu-Mudjug *neera* "sun" (S) ||
Dr. *nēr- "sun, day, time" (DEDR 3774: I, II, ?VIII).
59. A: PN: Dyirbalic: Nawagi (= "Halifax Bay") *nilgan*; NKabi *nelan*, MKabi *ŋalulum*, WKabi *gillan*, Biyali *elam*; Gamilaroi *gilli* etc. (S) ||
Dr. *nela- "moon" (DEDR 3754: I, III, IV, V, VI; Z 69).
60. A: PN: SW *kaḷa "fire" (OG 104; C 79); Muk-Thang (= Kurnai) *kurla* id. (S) ||
Dr. *kāḷ- "to burn" (DEDR 1500: I, III, V), *koḷḷi "fire-brand" (DEDR 2158: I, II). See T 85.
61. A: PN: SNarrinyeri *kene*; Marowra *kuniga, kunega*; Muk-Thang (= Kurnai) *kuniga* "fire" (S); IP - cf. Pesexem (→ CWTNG) **kani* "fire" (Sh 349) ||
Dr. *kaṉ- "to be hot, burn" (DEDR 1406: I, II, III, VI).
62. A: Daly R. (W) Marityaben, Marengar *wirir* "wind" (Tryon 1974, 105); PN: SW *waḷpa (OG 116); Aranda *olupa*; Gugu Yimidhir (→ Yalanjic) *walbun*; NWKulin *willa*; Yugambal (→ Kuri) *wollar*, etc. "wind" (S) ||
Dr. *vaḷi "wind" (DEDR 5312: I, III, V, VI).

63. A: Daly R.: (W) Marengar *kitʸar*, Ami *wutaR*; (E) Kamor *kutʸuwuy* "sea" (Tryon); PN: Karnic: Arabana, Ulaolinya-Wangkadjera *kuta*; Aranda *kwaʻa*, Andegerebina, Yaroinga *kwāḏa*; Warluwara *kūtʻōko*; Mingin *wáda*; Kulin *katʻin*; Piangil *katini* "water" (S) ||
Dr. **kaṭal* "sea" (DEDR 1118: I, II, III) and / or **kuṭi-* "to drink" (DEDR 1654: I, II, III).

64. A: PN: NYuin (Inland) *bana*; Kulin *bān*, *bāen*; Ngarrimouro (→ Yotayotic) *banna*; Gogaj (→ Maric) *bunna* "water" (S) ||
Dr. **paṉi-* "dew, fog, rain" (DEDR 4035: I, II, III, IV, V, VI, VII) or **vāṉ-* "rain, cloud, sky" (DEDR 5381: I, II, III, IV, V, VI, VII); IP - see SC 266.

65. A: PN: Dyirbalic: Bindal ("Cleveland Bay"?) *marroo*; Wiradhuric ("Bogan R."?) *murra* "rain" (SC after Curr, #190g); IP - see SC 266 ||
Dr. **maṟ-* "rain" (DEDR 4753: I, II).

66. A: Daly R. (W) Manda *menner* "ground, sand" (Tryon 1974, 277, 131); PN: SW: Luridja *manda*; Karnic: Kana *mundey*, Badjiri *maenli*; Marowra *mu(r)ndi* "earth" (S), cf. SW: pNgayarda **maṇṭa* "stone" (OG 105) ||
Dr. **maṉ-* "earth" (DEDR 4666: I, II, III, V, VI).

67. A: PN **parnta* "stone" (Simpson & Hercus 2004, 190) > SW: Mirniny *puṇṭaŋu*, Wirangu *paṇṭa* (O'Grady & Klokeid 1969, 306), Banggarla *panda*, *punda*, Kaurna (= Meyu) *bernta*; Yuulngu (= "Caledon Bay") *panda* etc. "stone" (S) ||
Dr. **paṇṭ-* "rock, block of stone" (DEDR 3903: I, III, V, VI); cf. Tulu *āli-parndu̯* = *āli-kallu̯* "hailstone", consisting of the continuants of pDr. **āli* "hail" & **kal* "stone" (see #68), hence Tulu *parndu̯* = "stone".

68. A: Gunwinyguan **kal-* "mountain, hill" (Pe 428, 441) PN: Mabuiag *kula*; Mbambylmu ("Princesse Charlotte Bay") *kūla*; Gumbaynggiric *kullam*, etc. "stone" (S); cf. T 39) ||
Dr. **kal* "stone" (DEDR 1298: I, II, III, IV, V, VI, VIII).

69. A: Daly R. (N): Tyeraity *wulu* (Tryon); PN: Wiradhuri *walaŋ*; Yuin (SInland) *wulluŋ*; NKuri (Kattang) *wíla*; Muk-Thang (= Kurnai) *walluŋ*; Emu-Mudjug *willong*; SW: ELuridja *walu* "stone" (S) ||
Dr. **vaḷḷi* "(whet)stone" (DEDR 5285: VI), cf. Tamil *vaḷ* "sharpness" (DEDR 5306).

70. A: PN: Banggarla (= Pangkala = "Port Lincoln") *purri*; Barbaram *burry*, Bindal (= "Cleveland Bay") *burree*, Ilba *burray*; Aminungo/Barna (= "Fort Cooper") *boor-ganna* "hill" : *ganna* "stone", Ringuringu (= "Hamilton R.") *poori* "hill"; Kaurna (= "Adelaide") *pure*; Koko Patun (= "Head of Burdekin R.") *purri*, etc. "stone" (T 399-400 after Curr); IP: Tasm. *peoora*, *peuraʳ* "stone"; And. **burin-* "hill" > Bale *båroin-da*, Puchikwar, Kol *burin-*, Juwoi *bruin-*, Kede *burin*, Chariar *burain* (see T 400) ||
Dr. **pōr-* "hill" (DEDR 4595: I, II) and / or **poṟṟ-* "mountain" (DEDR 4567: I, IV, V, VI, VII).

Appendix A: Nihali words without promising etymology with possible Australian cognates:
1. Ni. *boko*, *bokko* "hand" (K 301) || A: see #36.
2. Ni. *golga* "ear-wax" (K 311) || A: see #3. Kuiper compared the Nihali word with Dr. **kuṟump-* id. (DEDR 1855).
3. Ni. *kō-*, *kŭō-* "to bring" (K 305) || A: see #16.
4. Ni. *ma* "to give" (K 326) || A: see #17.
5. Ni. *miṅgay* "where", *miyan* "how much" (K 300) || pA **minHa* "what" (D 376).
6. Ni. *nān* "what", *nāni* "who" (K 330) || pA **nHaa* "what" (D 376).
7. Ni. *gon* "with" (K 312) || A ← PN ← SW **kuma* "one; together" (OG 114); **kuñci* "one" (OG 105) < pA **gu(NY)Ji-* id. (D 153). Kuiper compared Ni. *gon* with Munda: Kurku *-gon*, *-gan* "with" and also Dr.: Kannada *guṇṭa*; Kurukh *gane*, Malto *guni*.
8. *paṭ-/piy-* "to come" (K 335) || A: SW **pitʸa* "to come/go/walk" (O'Grady & Klokeid 1969, 304).

Appendix B: Words of unknown origin with possible Australian cognates in **Vedda** dialects of Singhalese:
1. *gala* "stone, rock" (Ge 512), *gal-* (SS 78) || A: see #68.

2. *gembō* "fish" (Ge 515: 'Kälä-basa') || A: Dampier Land *gumba* id. (C 86).
3. *moneeka* "what, which", *meyba* "here" (SS 90) || A **minHa* "what" (D 376).

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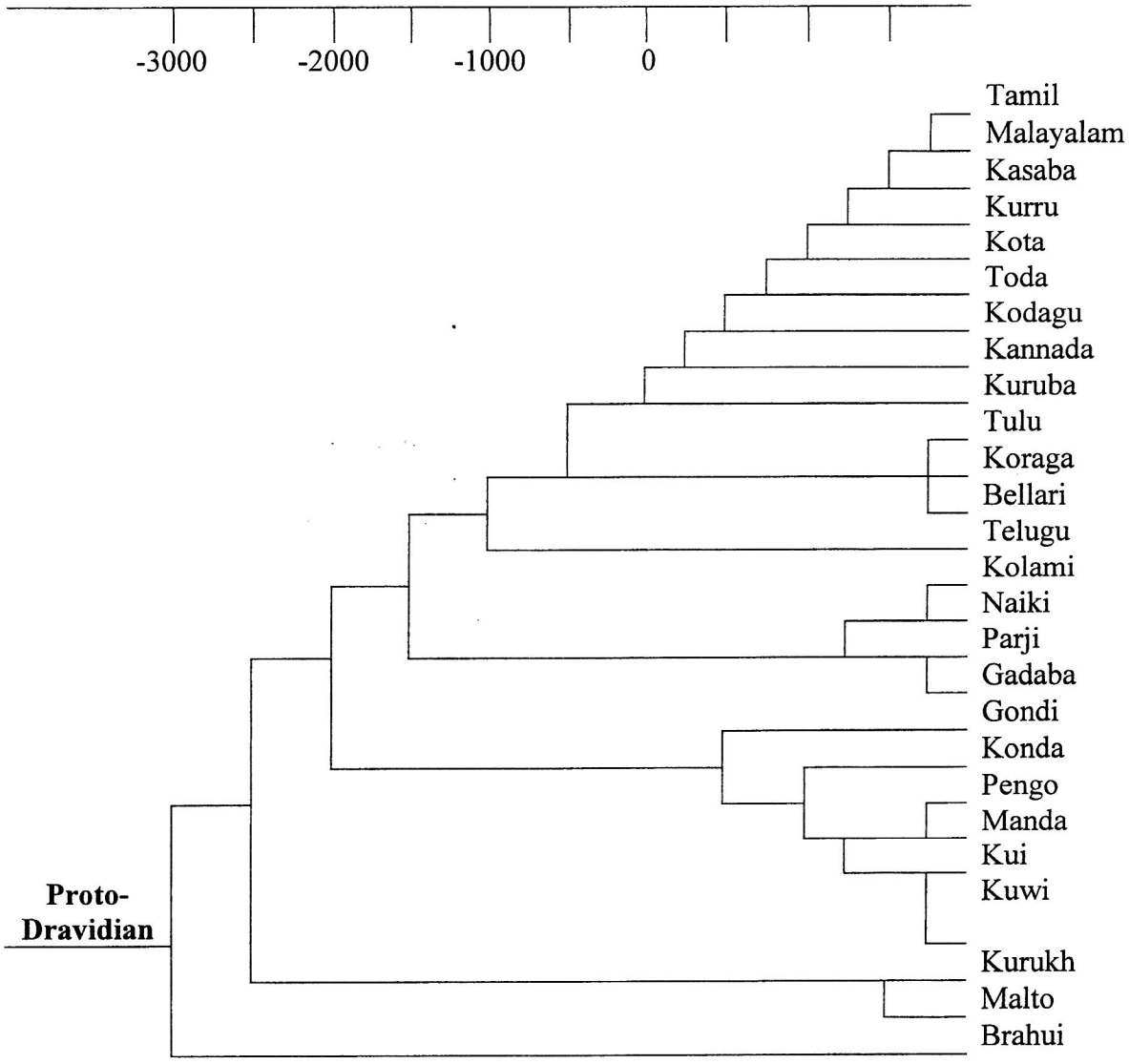
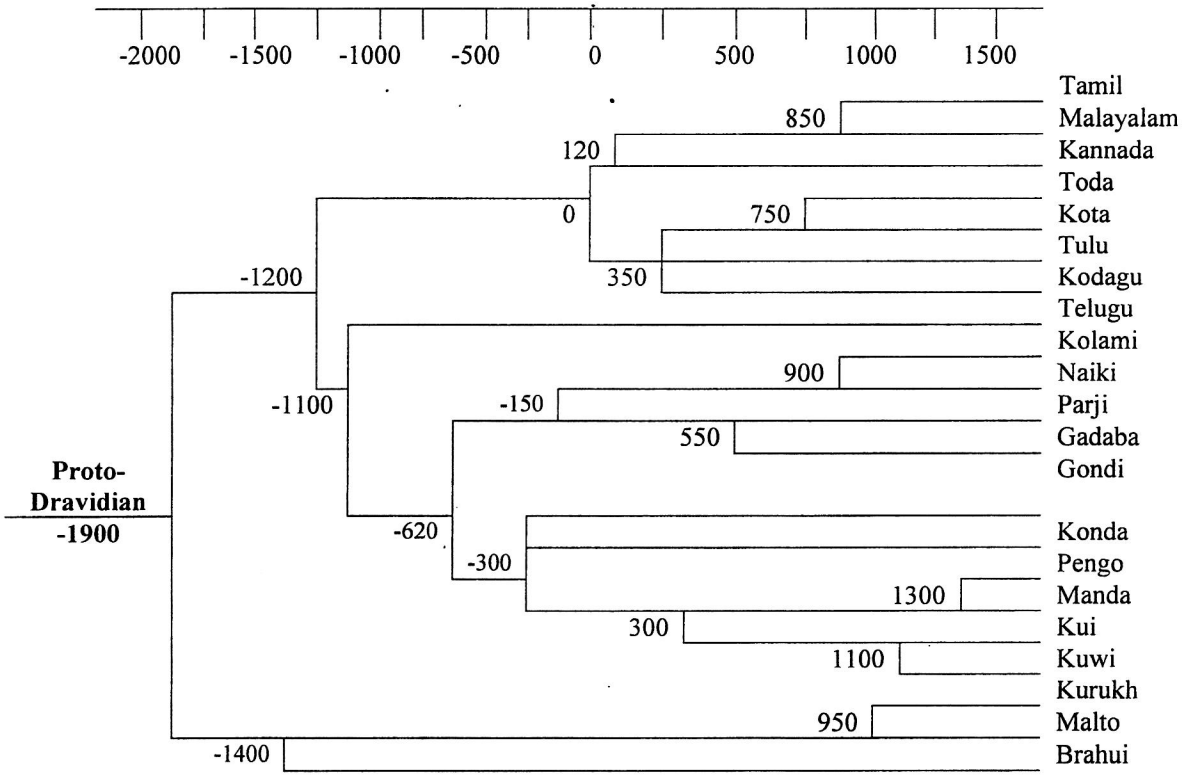
Appendix C: Classification of the Dravidian languages

1. Source: Andronov 1994, 12-13



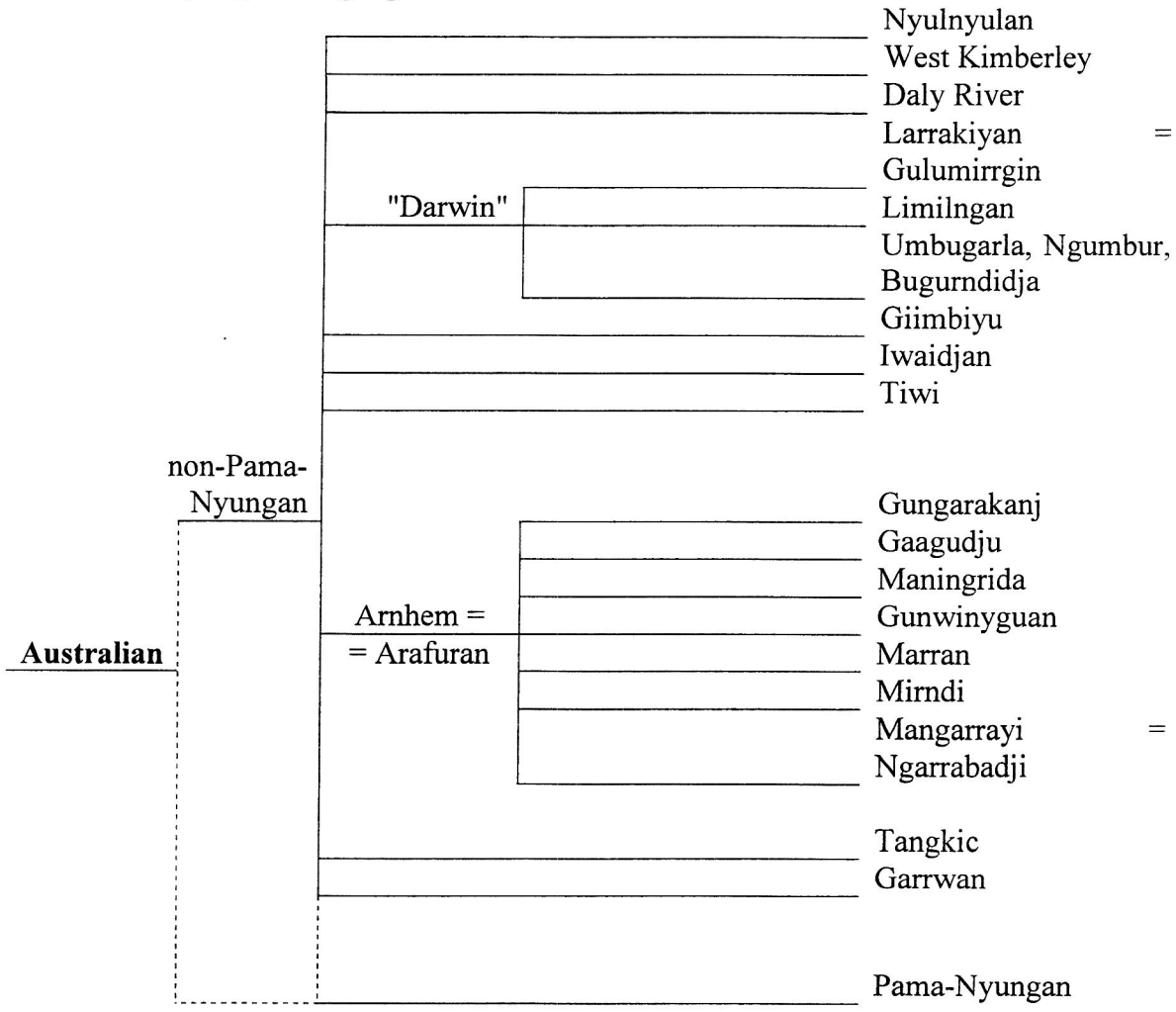
Appendix C: Classification of the Dravidian languages (continued)

2. The model of Georgij Starostin (Database STARLING, 2005), based on the 'recalibrated' glottochronology, gives surprisingly younger results:

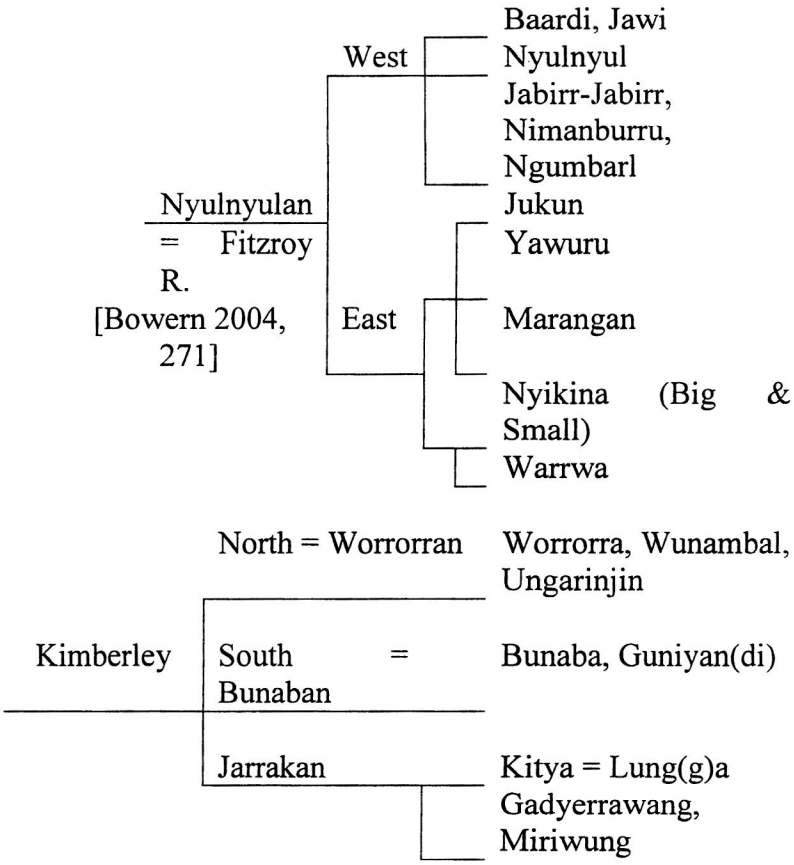


Appendix D: Classification of the Australian Languages (synthesis)

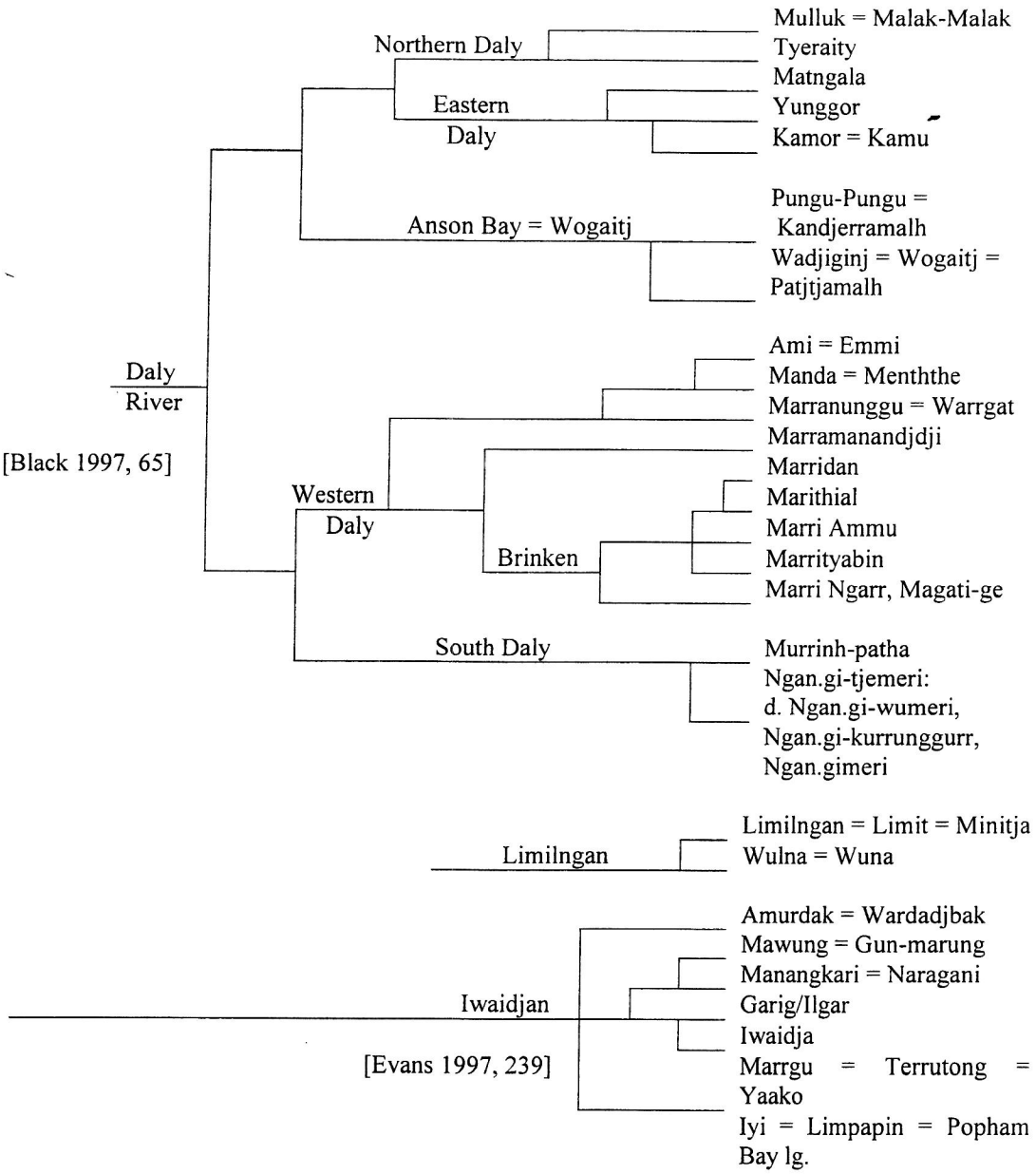
Non-Pama-Nyungan Languages



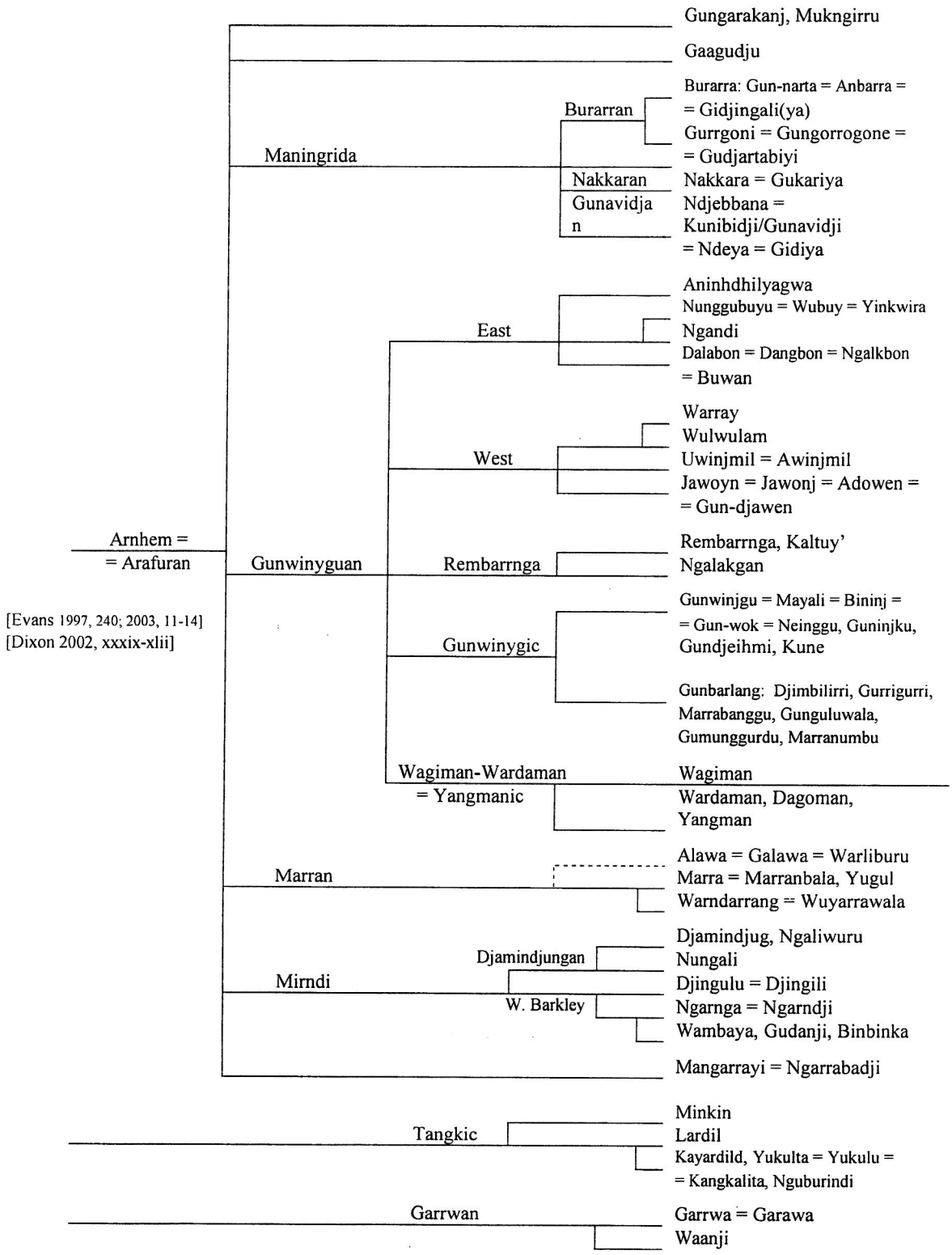
Appendix D: Classification of the Australian Languages (synthesis) (continued)



Appendix D: Classification of the Australian Languages (synthesis) (continued)



Appendix D: Classification of the Australian Languages (synthesis) (continued)



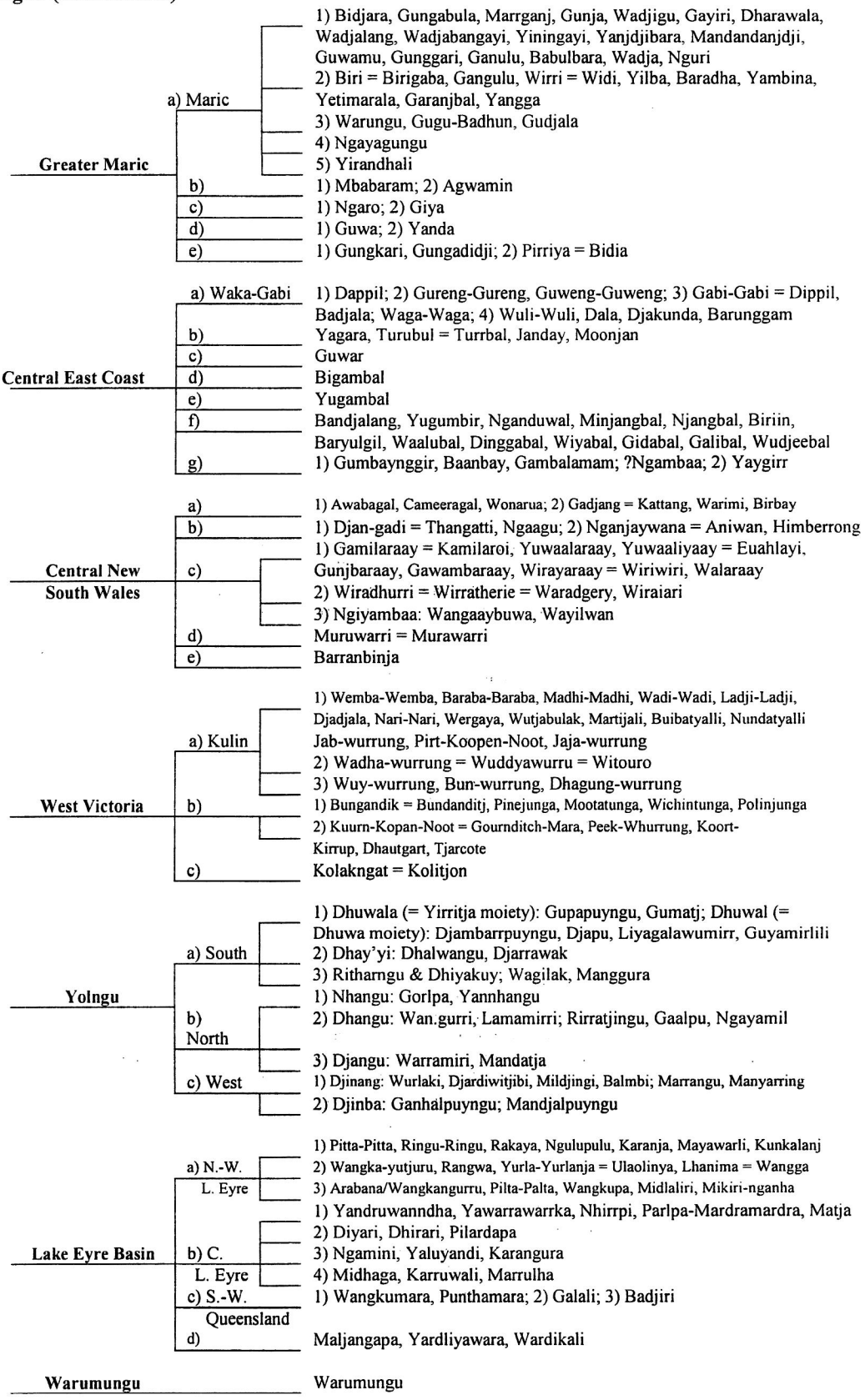
Appendix D: Classification of the Australian Languages (synthesis) (continued)

Pama-Nyungan (synthesis)

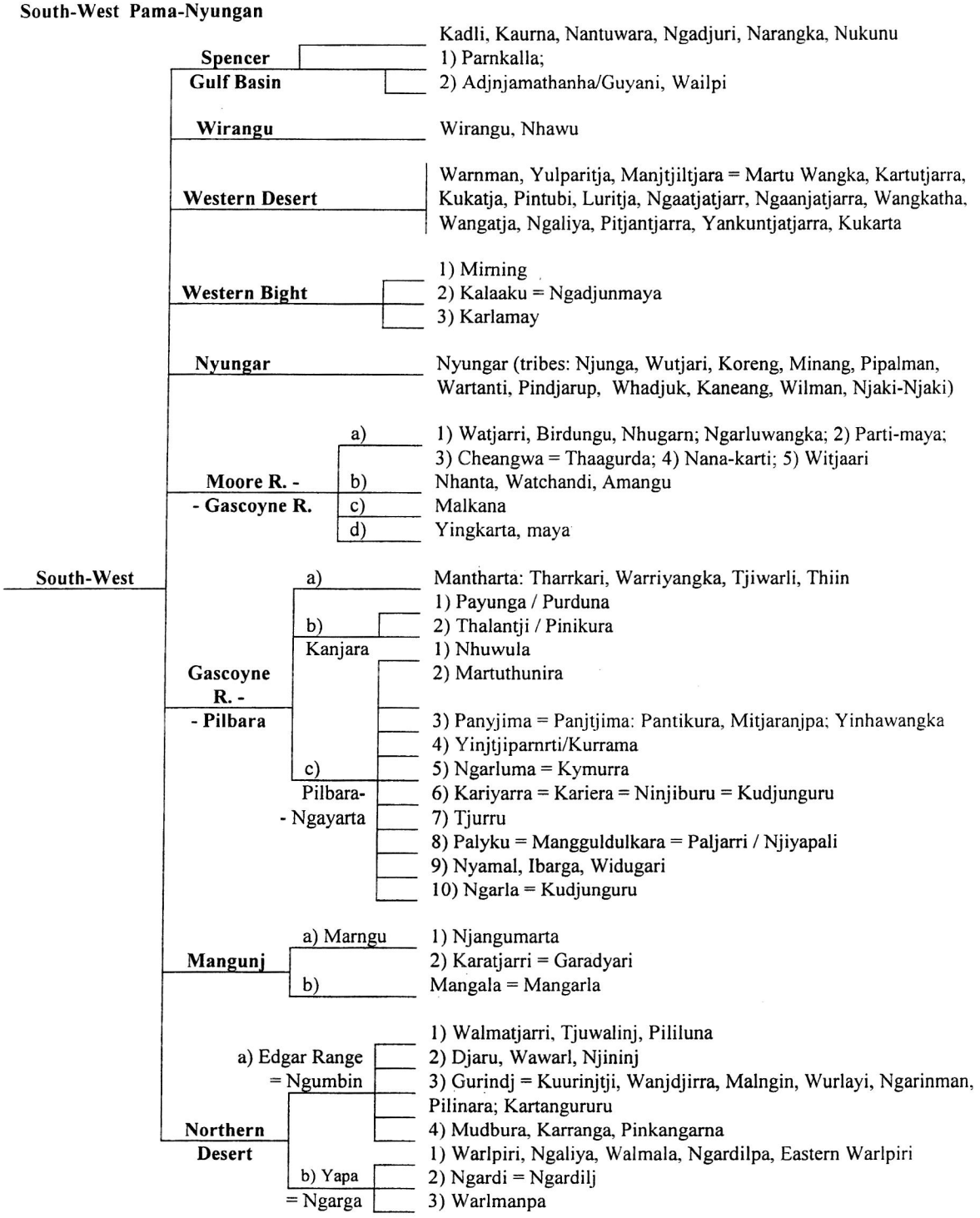
Pama-Nyungan

- North Paman — a) Gudang & Djagaraga; Uradhi; Wuthati; Luthigh; Yinwum; Anguthirmi; Ngkoth; Aritinngithigh & Latamngit; Mbiywom; Andjingith
- North Cape York — b) Umpila & Kuuku Yani, Uutaalnganu, Kuuku Ya'u, Kuuku Iyu, Kaantju
- Wik — c) Wik-Ngathan = Iintjenj; Wik-Me'nh & Wik-Ep; Wik-Mungkh & Wik-Iyanj; Kugu/Wik-Muminh; Bakanha = Ayabakan(u); Ayabadhu
- Umbidhamu — Umbindhamu = Umpithamu
- South-East Cape York — a) Morroba-Lama = Umbuygamu, Lama-Lama = Mba Rumbathama = Wanbara = Bakanambia; b) Rimang-Gudinha, Kuku-Wara; c) Oko Wurrima = Flinders I.. Marrett R.; d) Guugu Yimidhir, Barrow Point; e) Kuku-Thaypan; Kuku-Mini, Koko-Possum/Alngula; Takalak; f) Walangama; g) Mbara, Yanga
- West Cape York — a) Kuuk Thaayorre, Yak, Kirka, Thayem, Thayunth; Oykangand, Ogh-Undjan, Olgol; b) Yir-Yoront, Yirrk-Thangalkl; Koko Bera = Kok Kaber; c) Kok Narr =Kok Nhang = Kundar; d) Kurtjar, Rip = Ngarap = Areba; Kuthant; e) Kukatj
- Kuku-Yalanji — Kuku-Yalanji, Kuku-Njungkul, Kuku-Bididji, Kuku-Dungay, Kuku-Jakandji, Koko Walandja, Kuku-Djangun, Kuku-Muluridji, Kuku-Kulunggur, Wakura
- Cairns — a) Djabugay, Yirrgay, Bulway, Guluy, Njagali; b) Yidinj, Gunggay, Madjay
- Herbert R. — Dyirbal, Ngadjan, Waribarra Mamu, Dulgubarra Mamu, Jirrbal, Guingay, Djirru, Girramay, Walmalbarra; Warrgamay, Biyay; Nyawaygi; Manbara, Mulgu, ..
- Lower Burdekin R. — "Cunningham", "Gorton", "O'Connor" (= Mouth of the Burdekin R. by Curr)
- Greater Maric — see below
- Mayic — 1) Ngawun, Wunumara, Mayi-Yapi, Mayi-Kulan; 2) Mayi-Kutuna
- Rockhampton/Gladstone — 1) Darambal, Kuinmabara, Karunbara, Rakiwara, Wapabara; 2) Bayali
- Central East Coast — see below
- Central New South Wales — see below
- Sydney — 1) Dharuk, Gamaraygal, Iora; 2) Darkinjug
- Southern New South Wales — a) 1) Gundungurra = Ngunawal = Burragorang; 2) Ngarigo = Ngarrugu; b) 1) Dharawal = Thurrawal, Wodi-Wodi; 2) Dhurga, Dharamba, Walbanga; 3) Djirringanj; 4) Thawa
- Muk-thang = Kurnai — Muk-thang = Kurnai = Gaanay, Nulit, Thangquai, Bidhawal
- Upper Murray — 1) Pallanganmiddang; 2) Dhudhroa = Djining-middang tribe = Yaithmathang
- Yota-Yabala — 1) Yota-Yota = Yorta-Yorta (Bangerang or Pine-gorine tribe); 2) Yabala-Yabala
- West Victorian — see below
- Lower Murray — 1) Yaralde = Ngarrinyeri = Ngarrindjeri, Tangane, Ramindjeri; 2) Ngayawang; 3) Yuyu = Ngarrket; 4) Keramin = Kureinji; 5) Yitha-Yitha, Dardi-Dardi
- Baagandji — Baagandji, Gurnu = Guula, Naualko, Baarrundji, Wiljaali, Dhanggaali, Bulaali, Wanjubarlgu, Bandjigali, Barrindji, Marrawarra = Maraura
- Kalkatungu/Yalarnnga — 1) Kalkatungu; 2) Yalarnnga
- Yolngu — see below
- Aranda — 1) Aranda = Arrernte: Anmatjirra, Aljawarra, Ayerrerenge, Antekerrepenhe, Ikngerripenhe = Eastern Aranda, Mparntwe Arrente = Central Aranda, Pertame = Southern Aranda, Tyuretye Arrente = Arrente Alturlerenj = Western Aranda, Alenjerntarrpe = Lower Aranda; 2) Kayetetj = Kayteye
- Yanyuwa-Ngarna — a) Yanyuwa = Yanyula = Wadirri, Walu; b) South Ngarna: 1) Wagaya, Yindjilandji; 2) Bularnu, Dhidhanu; 3) Warluwara, Kapula, Parnkarra
- Lake Eyre Basin — see below
- South-West — see below

Pama-Nyungan (continuation)



South-West Pama-Nyungan



Sources: Black 1997, Bowern 2004, Dixon 2002, Evans 1997, Evans 2003.

Great Andamanese reconstruction underway: A condensed handout with tentative remarks on Papuan and Australian vis-avis external language families

By **Timothy Usher**, San Francisco, CA and Santa Fé Institute

Editor's preface: Many of the same remarks as were made about the lecture by Alison Brooks also apply to this paper by Timothy Usher. Overleaf you will find Timothy's formal handout to the conference. He has seen no need to revise it and it is offered here in its entirety. However at the tail end of his talk and the last few minutes of the conference we urged Timothy to comment on the big basic question about Australian and Papuan relationships, either to each other or to the rest of the world. He did give those opinions but it was rather hurried. Therefore, we will sum up those opinions below but with the strict proviso that these are not his final or formal proposals. The editor is responsible for possibly mishearing or misunderstanding what he said. Timothy is **only supposed** to have said these things.

But the remarks were far too interesting to ignore, so we present them here in all their glory in hopes that we heard accurately and that Usher may agree some day with their general outline.

Indo-Pacific (of Greenberg) is at least **temporarily disunited**. Most of its parts plus the new member –Kusunda—are incorporated into one or the other of two new groupings, to wit: **Paleo-Sundic** and No Name which we can call **Old Oceanic** at least for the moment. We heard, and Timothy wrote, "Paleo-Sundic" but we heard no name for the second and larger group. "Old Oceanic" could also be called "Macro-Papuan" or "Macro-Australian" or some other suitable name

Apparently **six branches** of Indo-Pacific, to wit from **Sko** to **Sepik-Ramu** or most of Whitehouse's topical Papuans are **not** included; this **needs to be confirmed**!

Paleo-Sundic is partially indicated by Timothy's own handout. Its first innovation perhaps is to grant **Önge** a higher status than South Andaman would confer on it. The second innovation is to split the "West of Papua" cluster into two groups, dispatching one towards Old Oceanic while keeping the other in Paleo-Sundic. The membership seems to be **Kusunda, Great Andamanese, Önge, North Halmahera, West Birds Head, Bernesu, Abun,** and **Brat**. And probably **Yawa**, as indicated in the third paragraph of the handout. "Abun" is not listed in Ruhlen's GUIDE anywhere, nor Bernesu, nor is "Yawa". However in the "Geelvinck Bay"section of Indo-Pacific there is a "Yava" listed. With German and Dutch reporters it is possible that Yava and Yawa are the same. ([v] < 'w'). Since many millennia may separate the individual members, even in the Andamans, there is no reason to assume that further sub-grouping will reveal major clades.

Old Oceanic has three primary foci, as follows: **Trans New Guinea** + **Timor-Alor-Pantar**, **Australian**, and **"Melanesian"+Tasmanian.** Of course Timor et al. is the second part of what we called "West of Papua" earlier, "Melanesian" is probably the same as what we called "East of Papua" earlier. More specifically **New Britain, Solomons, Santa Cruz,** and **Bougainville** –islands.

If this is Timothy Usher's true scheme, and it holds up to scrutiny, then we will have supported Trombetti in connecting India with Tasmania and Fiji. Providing, of course, that old "West of Papua" can be re-united and Old Oceanic linked to Paleo-Sundic, the conference will have accomplished what it set out to do!

Great Andamanese reconstruction underway

The reconstruction of Proto-Great Andamanese, based upon the comparative vocabularies given in Portman (1887, 1898) and the more recent studies of Yadav (1985), Narang (ms.) and Abbi (2006), is well underway.

Internal classification

The Great Andamanese languages evidence the following lines of descent:

1) Great Andamanese
    i) North
        (a) Chari
        (b) Jeru
        (c) Kede
        (d) Kora
    ii) Central
        (a) Puchikwar
        (b) Juwoi-Kol
            1. Juwoi
            2. Kol
    iii) South
        (a) Bale
        (b) Bea

The relative position of the three subgroups is debatable.

The North Andamanese subgroup is not amenable to further subclassification due to the mediocre quality of Kede and Chari data given in Portman (1887) and the corruption of lineages in contemporary data (Anbi 2006). It is probable that they were quite similar to one another in any event.

Consonants

Proto-Great Andamanese had the following consonant phonemes:

	labial	apical	palatal	velar	labiovelar
nasal	*m	*n	*ɲ	*ŋ	
aspirated stop	*p^h	*t^h	*c^h	*k^h	
plain stop	*p	*t	*c	*k	
voiced stop	*b	*d	*j	[*g]	
implosive	*ɓ (?)				
lateral		*l			
tap/trill		*r			
glide					*w

Three stop prosodies were distinguished in each of four places of articulation, aspirated, plain (voiceless) and voiced. Additionally, there is a fourth labial prosody, which has

provisionally been treated as implosive. Where C is a voiceless stop and D a voiced stop at a given point of articulation, the correspondences between the subfamilies are as follows:

Great Andaman	N. Andaman	C. Andaman	S. Andaman
*Cʰ	*Cʰ	*C (?*Cʰ)	*D
*C	*C	*C	*C
*D	*D	*D	*D
*ɓ (?)	*b	*b	*p

Evidence for voiced velar *g, however, is very scant. It is found in only a handful of roots, none of which involved North Andamanese reflexes.

Because Portman (1887, 1898) does not distinguish aspiration, even in Chari and Kede, where it was almost certainly present, there is no way to know whether Central Andaman likewise drew this distinction or merged aspirates with plain voiced stops.

Initial *j- lenits to *y- in South Andamanese as well as in Puchikwar and Kol. Medial *-k- elides to zero in North Andaman and Puchikwar. Medial *-p- lenits to -w- in Kora.

Vowels

After accounting for the idiosyncrasies of and variations in Portman's transcriptions, there remain a large number of distinct and well-supported correspondences in the vowels of the Andamanese subgroups, the original values of which are debatable. Generally, the Northern group dislays similar values to the Central:

South	Central
*i	*i
*i	*e
*e	*e
*ɛ	*ɛ
*æ	*æ
*ɑ	*ɑ
*ɑ	*ɒ
*ɑ	*ɔ
*ɑ	*o
*ɔ	*ɔ
*o	*o
*u	*u
*u	*i
*u	*e
*u	*æ

Possible external comparisons

The comparison of personal pronouns, while hardly sufficient or infallible, has proved a useful heuristic guide to the preliminary determination of linguistic relationships.

Compare the pronomial prefixes of Great Andamanese and Önge with those of Kusunda, North Halmaheran and several languages of New Guinea's Bird's Head:

	Kusunda	G. And.	Önge	N. Hal.	W.B.H.	Abun	Brat
1 sg.	t-	*t^h-	m-	*t-	*t-	t-	t-
2 sg.	n-	*ŋ-	ŋ-	*n-	*n-	n-	n-
3 sg.	g-	*∅-	g-	*w-	*w-	y-, n-	y-
3 sg. f.				*m-	*m-		m-
1 pl. excl.	t-	*m-	m-	*m-	*m-	m-	p-
1 pl. incl.				*f-	*f-		p-
2 pl.	n-	*ŋ-	n-	*n-	*n-	n-	n-
3 pl.	g-	*n-	n-	*y-	*y-	y-	y-

(G.And. = Great Andamanese, N. Hal. = North Halmaheran, W.B.H. = West Bird's Head)

First and second singular free pronouns in selected Paleo-Sundic languages:

	Kusunda	N. Andamanese	Brat	Yawa
1 sg.	*tsi	*t^hio	tio	*ʃo
2 sg.	*nu	*ŋio	nio	*ɲo

Excepting the three listed families of the Bird's Head, very few reliable lexical resemblances between these families have been identified thusfar. It is hoped that the creation of robust reconstructions for Great Andamanese, North Halmaheran and West Bird's Head will prove fruitful in this regard.

New Books and Old Quotations

Toward An Evolutionary Biology of Language

By Philip Lieberman,

Fred M. Seed Professor of Cognitive and Linguistic Sciences and Professor of Anthropology at Brown University. 2006. Cambridge, Mass. and London, England. Belknap Press of Harvard University Press. Pp.427. Index. $49.95. 60 line illustrations.

According to HUP's blurb:

"Philip Lieberman argues forcibly that the widely influential theories of language development advanced by Chomskian linguists and cognitive scientists, especially those that postulate a single dedicated language "module", "organ", or "instinct", are inconsistent with principles and findings of evolutionary biology and neuroscience. He argues that the human neural system in its totality is the basis for the human language ability, for it requires the coordination of neural circuits that regulate motor control with memory and higher cognitive functions. Pointing out that articulate speech is a remarkable efficient means of conveying information, Lieberman also highlights the adaptive significance of the human tongue.

Fully human language involves the species-specific anatomy of speech, together with the neural capacity for thought and movement. In Lieberman's iconoclastic Darwinian view, the human language ability is the confluence of a succession of separate evolutionary developments, jury-rigged by natural selection to work together for an evolutionarily unique ability."

Ongota: A Decisive Language in African Prehistory

By Harold C. Fleming

Emeritus Professor of Anthropology, Boston University and Secretary-Treasurer of ASDLIP. 2006. Wiesbaden: Harrassowitz Verlag. Aethiopistische Forschungen. Band 64.. Pp.214. Euros 78 (78 Euros). A 25% reduction in price may be possible; contact the author.

From Conclusions. "First, Ongota is an Afroasiatic language. The overwhelming testimony of the lexicon, ..Ongota morphemes closely resemble their mates in various branches of Cushitic, Semitic, or Omotic... Second, Ongota in its grammar does not closely resemble any recognized linguistic group in its neighborhood or elsewhere. Were one to look only at the morphological evidence the Afrasian conclusion would be less sure and subject to controversy. .. More importantly, no single group of modern languages appeared to be `home' for the Ongotan grammemes. Rather they related here to one group, there to another, and yonder for yet another. A sure sign of deep singularity... Afrasian's homeland is surely Ethiopia."

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